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by RAYMOND Z. GALLUN





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ASTOUNDING STORIES

JULY
1935

A STREET & SMITH PUBLICATION

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Table of Contents

Feature Novel:

THE SON OF OLD FAITHFUL . . . *Raymond Z. Gallun* . 8
The sequel to "Old Faithful" carries thought-variant development of new ideas for interplanetary communication.

Novelettes:

LIQUID POWER . . . . . *Warner Van Lorne* . 46
He looked—spellbound—then he leaned closer—he was on the verge of finding and bottling "liquid electricity."

THE AVATAR . . . . . *Clyde C. Campbell* . 128
Here again man dabbles with the secret of life and creation.

Short Stories:

EXILES OF THE STRATOSPHERE . *Frank Belknap Long, Jr.* 35
From the upper reaches of the air a ladder drops, swaying like the silken thread of a cobweb!

THE ACCURSED GALAXY . . . *Edmond Hamilton* . 64
"Now at last we know why all the other galaxies are flying from ours!"

MENACE FROM SATURN . . . . *Clifton B. Kruse* . 76
It seemed impossible that menace could be so utterly malignant—yet the facts were plain.

BRAIN LEECHES . . . . . *Edward S. Mund* . 109
Men fought blindly—for they knew nothing of what they were fighting!

THE FAR WAY . . . . . *David R. Daniels* . 119
"Suddenly the man out of time faded and vanished."

Serial Novel:

TWELVE EIGHTY-SEVEN (Part III) *John Taine* 86
A master of science fiction carries the world into battle with the forces of nature, as well as of men.

Readers' Department:

BRASS TACKS (The Open House of Controversy) 150
EDITOR'S PAGE 7

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Story illustrations by Elliot Dold, Jr., and M. Marchioni

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Fellow Travelers—

There are some mighty interesting letters in Brass Tacks this month and I'm only sorry it is impossible to include more. I get a real thrill in reading them over, for behind the comments about van Kampen and wire staples there is a pulsing throb of unified interest that is vivid life in any magazine.

There is something about science-fiction that pricks your interest if you give it a chance.

It arouses curiosity first; and then as you read, the curiosity turns to interest because you are off the humdrum, beaten path of ordinary fiction.

It seems impossible to me that any man can hold his thoughts in check when he gazes at the vast arc of a star-spangled sky. Despite himself, the fleeting thought creeps into his brain-that astronomy must be fascinating.

If he succumbs to the temptation to get a telescope, his wonder grows. The ineffable beauty of Saturn, the strange canals on the surface of red Mars, the austere grandeur of Jupiter! If he's alive, his mind takes wing and he becomes a traveler to the far places of the sky.

That is why the Astounding audience is a select circle. We are adventurers together. Earth is our home port, of course—but didn't I see you last year on Venus? Or was it the year before we met on our expedition to Mercury?

No one who is a stranger to our circle would understand that our pathways are the starways, and that you and I have met beyond the Moon.

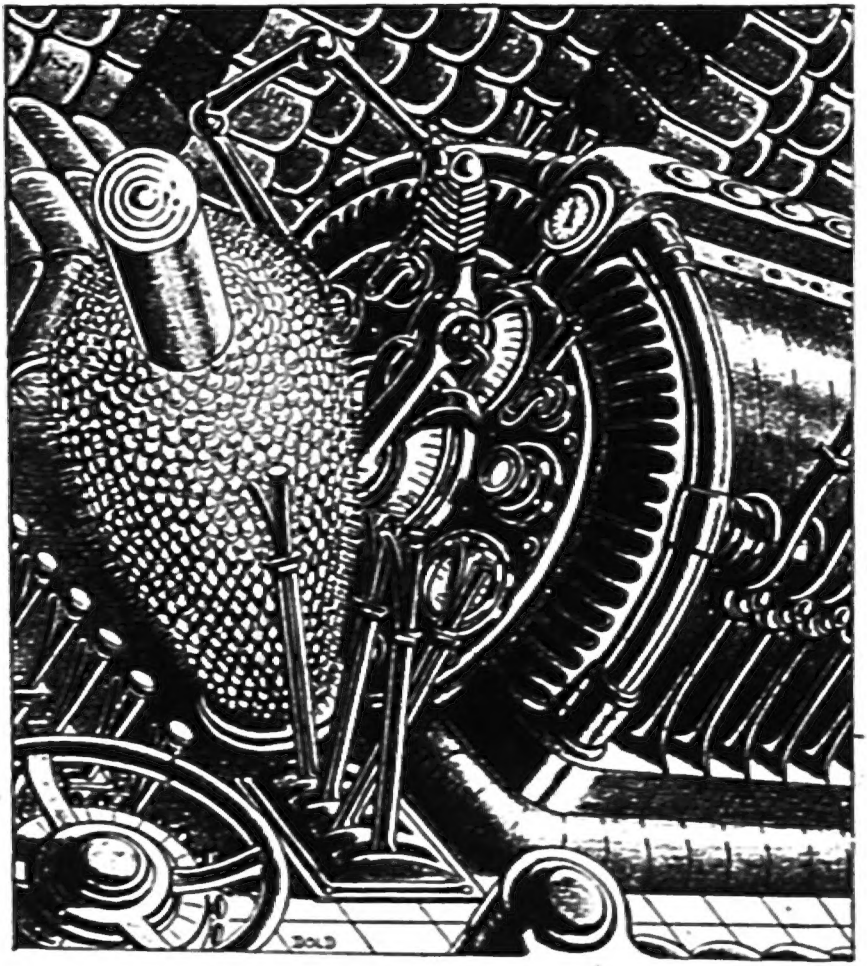
I enjoy your letters and our different opinions are a stimulant. There is so much for us to explore, so many untouched and untraveled roadways in the heavens. It doesn't matter that You rate one story above the others, and that another You rates a different story at the top.

Perhaps the pleasure of travel is my joy; perhaps yours is the deceleration at the end of our journey; perhaps the other You gets his keenest pleasure from the construction of our space ship—still it is all one—all part and parcel of the same great field of science-fiction.

That is why we are selfish if we do not introduce new friends to the most fascinating circle in the world. If they have no imagination they won't like it—but if they have one, you will have gained a new traveling companion.

—The Editor.

THE SON OF OLD



Like a monstrous ten-pin, endowed with intelligence and one hand, it toppled and clutched its way to the controls.

"Old Faithful" died, but his idea lives—and fate chooses his son to carry on.

THE ORNITHOPTER glinted in the sunset as it swooped around on flapping wings above the desert. The weird grace of its movements was marred only by a hesitant uncertainty, in which were reflected the feelings of its pilot.

He was not a man, for this was not a world of men. The nearest human beings were over fifty million miles

FAITHFUL

by Raymond Z. Gallun



gulp, across space. Yet there seemed within him now, a satisfaction and quietness beyond ever grasp and understanding.

Tenoch, his queer, flattened body leaned forward as he gazed at the landscape beneath. Ragged tendrils of gray flesh tightened in contentment. His eyes were misted.

Squatting down there amid the dunes was a low, massive structure, capped by a silvery dome. Over it, in the western sky, shining brightly through the tenuous atmosphere, even though the Sun was still above the horizon, was a star. The two—the building and the star—were forever associated. The former was the workshop of him who had been known on Earth as "Old Faithful"; the latter was Earth itself.

And the creature who looked down on the dusty, dun-colored walls, from the aircraft, was Old Faithful's child. Since the Martians do not possess a vocal language, the only name by which he may be known to us is Number 775. He was the 775th descendant of a line, the founder of which had chosen a barred circle as his family totem. Old Faithful had been the 774th.

Number 775 had come from a distant city to fulfill a command of the Rulers. It was his first mission, since he had just emerged from the nursery chambers, where he had been educated, and where he had reached the swift maturity of his kind. His orders were to destroy his parent's deserted workshop. Their implication was clear, vindictive. Old Faithful had been a seeker after forbidden wisdom—forbidden because it was impractical; worse, he had grossly defied venerable tradition, becoming a criminal and an outcast. That the task of wiping out the relic of his activities should be assigned to his child was, at once, poetic justice and a test. Failure to obey could mean naught else than death to Number 775, either by thirst and starvation, or violence.

For many reasons he did not wish to carry out the command. Yet, respect for ancient law was more than habit with him, and with all his race. It was instinct. Absolute obedience was the key to survival on decrepit Mars. These opposing forces wrenched his emotions with a fierceness that we can but vaguely conceive. On one side was love, resentment, and the appeal of the colossal dream of interplanetary communication; on the other was loyalty to tradition, built into the very flesh of him by countless generations of ancestors who had lived by formula.

Number 775 knew most of the story of Old Faithful and its relationship to himself. He knew how his sire had first turned his telescope toward Planet Three—Earth—half convinced that it was inhabited. Then the Light had flickered between the horns of Three's crescent, spelling out signals in a strange, clumsy code.

Old Faithful—Number 774—had built a monster apparatus to duplicate those flashing signals. For nine Terrestrial years he and those unimaginable entities across space had wrestled with the problem of communication. Old Faithful had managed, by careful comparisons and brilliant guesswork, to learn a few things—enough to heighten the hope that the realization of his dream belonged to a not too-distant future.

The Rulers had intervened, however. Old Faithful's allotted life span was ended. Since his quest for impractical knowledge was regarded as wasteful, an extension was out of the question. A young individual must take his place in the dwindling population roll of Mars. With exquisite irony his death was ordered.

Yet he had defied the sentence. A comet was approaching. It would pass close to both Mars and Earth on its Sunward journey. It gave him an idea. Fleeing to the desert, he had constructed a projectile there, with the aid of five robot henchmen. He had loaded it with charts and models, and, himself aboard, he had fired the shell toward the comet, hoping that it would fall into the gravity field of the long-tailed visitor, and would be drawn close to Planet Three. Thus he had planned to make the vast leap between worlds, a feat still impossible of achievement to a craft relying entirely upon its own power.

YES, the child of Number 774 knew that much of the story. His sire, coming secretly to the nursery chambers at night, had told it to him in the subtle, complete way that the Martians use to exchange ideas; a way that involves neither vocal speech nor telepathy, but

depends on the contact of nerve filaments of one individual with nerve filaments of another.

Today the story had been told him again by the agents of the Rulers. Because his parent had been a rebel they mistrusted the young Martian: if he destroyed the workshop, the suspicion would be vindicated; if he did not, the penalty would be enforced, and others would wipe this perverting monument to useless learning from the face of the planet. The situation had all been very clearly presented to him.

That Old Faithful had actually crossed space, but because of some breakage in his equipment, had smashed in the dense terrestrial atmosphere, Number 775 did not know. The mystery of this unanswered question must have aroused a thousand wild imaginings within him now, as he circled and swooped above the arid landscape. Then, too, though he was not a man, the memory of his sire had a haunting sweetness, stronger than its taint of shame. Besides, on Mars, where sex plays a part in reproduction but once in hundreds of generations, and where an individual has but a single parent, heredity is very strong. This being true, might not Number 775 feel the same wild yearnings that had dominated Number 774, even in the face of an instinctive respect for law, violated only once in a millennium?

We can liken his reasoning, then, to that of a small boy who invades forbidden ground because of an overpowering curiosity. The analogy is perhaps inaccurate, but it will serve. The workshop and the star fascinated Number 775 more than anything in his brief experience. The intensity of his interest was beyond anything that a routinized creature of his kind might expect to feel in a lifetime. Possibly we can go so far as to capture a human and homely overtone of his thoughts: "Why not investigate? It will take only a moment, and nobody will see or know!"

Maybe such an insinuation would be too presumptuous. But however devious the path by which he arrived at a partial solution to his emotional conflict, the result will seem quite Terrestrial.

The Sun had dipped below the horizon. The red streak it left behind was fading with visible rapidity when Number 775 sent his ornithopter plummeting groundward. It landed at a bird lands, with broad, metal feet braced against the loose, dry soil. It strode forward, for it was not merely meant to fly; it was a versatile fabrication, capable of many functions like a true body of flesh.

Before the gate of the structure Number 775 brought his metal mount to a pause, as if, momentarily, opposing forces were making a last stand within his brain. A knobbed arm projecting laterally from the robot's torso wabbled nervously, as if the creature who controlled its movements more than half believed it best to hurl from the device the flaming bolts of destruction, before he had an opportunity to be tempted further.

But at length metal talons worked the fastenings of the gate. The ponderous portals opened and closed behind the Titan when it had passed through.

Once more the scene outside the walls had the aspect of absolute desertion. The quick night had come now, and the brittle cold. Phobos, the nearer moon, a jagged lump of rock captured from the asteroid belt, was in the sky, hurrying zenithward. Under its rays the landscape became a realm of ethereal enchantment, grand and lifeless, where only shadows moved. Grotesque boulders, carved by the wind, cast inky shadows upon silver. In the midst of it all, the workshop stood, like a temple to dead deities. Above, the stars

burned. Earth looked on from the west, with a calm lack of anxiety. And from some invisible niche in the scheme of things, Fate and Destiny hesitated, not knowing whether to smile or to frown.

Within the ramparts of Old Faithful's lair, a horror prowled, investigating, exploring, touching this and that. Nothing in the structure had been disturbed since its master had departed. Only a fine ochre dust, eloquent of long vacancy, covered everything. Otherwise there was no change. The luminescent, emerald murk still lingered in the halls and rooms. Mechanisms, after more than a Martian year of rest, were ready to spring into action at a touch.

After threading his way through the entire building, Number *775* returned to the telescope chamber. Here he dismounted from the ornithopter robot. Three metal legs unfolded from the arrangement of mechanisms attached to his body. Forthwith he trained the tremendous optical instrument on Earth, and viewed its crescent for a few minutes.

His eagerness led him on. The levers of the signaling apparatus moved under his tendrils. Buried machines groaned, and presently a flare of cold light blazed and thundered from the outside of the observatory dome. It was the sign which Number *774* had used to let his Friends of the Light, watching across space from Three, know that he was ready to receive. Dared Number *775* expect an answer to his call now, after so long?

Keyed up, he waited, while the minutes which light required to bridge twice the interplanetary void passed. Then elation came upon him like a wave. Deneb, flickering on the dark side of Planet Three was a dot of radiance. The reproducer hung at Number *775*'s side, attached to a sensitive photo-electric cell, magnified those flickerings, making them easier to see. The beings of Earth had watched patiently indeed! Could he, dared he, fail them now?

THE BREAKING POINT had been reached. Number *775* was ready to discard his loyalty to Mars. But what good might he accomplish if he did? His defiance would be swiftly discovered; he would be killed or simply allowed to starve. The situation in which he found himself seemed to present insurmountable barriers on all sides.

Only by conforming to tradition could he survive. Yet the vision of Old Faithful had taken complete possession of him now; it could not be lightly discarded. Lashed by it unmercifully, his brain, gifted with all the keen, cool deductive powers to which the Martians are heirs, struggled with the dilemma, seeking some slender way out.

Number *775* was, of course, unable to glean any hint of meaning from the Earthly signals, yet the records his parent had kept were at hand, ready for his attention. In a short time he could learn all that the old rebel had known concerning them. That would be easy enough. Only his fellow beings mistrusted him. If he did not return to the city by dawn, two ornithopters would be sent out to search for him. The justice they would mete out as a penalty for disobedience, would be swift and sure if they discovered him.

He might hide somewhere and carry on his investigations in secret; but then there was the matter of food and water. He had found that there was a small supply in the storerooms—enough for twenty-five days, perhaps, with rigid economy. Yet what might be accomplish in so brief a time when Old Faithful's efforts had consumed years?

No, it was unreasonable. He could not remain here and throw himself away so foolishly. To do so would be worse than useless.

Still, Number 775 did not give up. Almost without realizing it he had fallen completely under the spell of Earth's enigma. The signals danced in the vision globe before him; the glow in the reproducer bulb beside him on his lofty perch beat them out in throbbing pulsations. Everything he could see or feel now beckoned to him, stirring up within him an intolerable longing from which he could not hope to find rest except in achievement.

He squatted there under that behemothic rotunda, a fragile lump of flesh, hideously formed, yet inspired by urges that few mortal things could know. If there were only some other means, some quicker way to reach out and grasp what he sought!

Presently a disturbing element like a threat of danger registered itself in his mind. He had no organs of hearing, but a foreign vibration had been detected by his keen touch sense, telling him that he was being approached from behind. Were the Ruler's agents here already? Catlike he pivoted on his perch, high-placed among the girders of the telescope. Five manlike creations wrought in metal had filed into the observatory.

For an instant Number 775's muscles were taut and his eyes glittered defensively. Then he understood. These were the robots of his parent, come now to do his bidding. They had helped construct Old Faithful's projectile in the hidden valley. They had witnessed its departure amid a blaze of Titanic forces. Afterwards, their master gone, they had done the thing they were meant to do—trekked back across the desert to the workshop, there to await the return of Number 774, or the appearance of some one else who would assume the responsibility of commanding them.

Their presence must have cheered the young Martian; he was not alone. These soulless fabrications would help him in anything he chose to attempt. Their loyalty could be depended on far more than the questionable allegiance of living intellects, more complex than they, yet fickle and willful.

II.

A WAY, a means—one that had a chance for quick success. If Number 775 could find one, he would make use of it, however slim its promise. If he could not find one it would be necessary to desert his dream, and such a prospect was almost unbearable. His tendrils coiled with sheer nervous unrest as he considered the problem from every angle.

Then, out of the teeming swirl of his mind an idea was evolved. It hinged on the possibility that his sire had made a certain very logical preparation before his departure, a preparation which had its roots deep in the science of ancient Mars. Number 775 trusted the keenness of parental judgment sufficiently to believe that few opportunities had been overlooked prior to that first leap into the void.

The automatons would know. The Martian climbed down from his eyrie and strode toward them. One was more intricate than the others, a sort of foreman. A bundle of pink nerve filaments unsheathed itself from the extremity of one of Number 775's appendages. It probed into the complexities of the robot's structure, contacting the maze of delicate instruments that composed its brain. What followed was like a conversation between comrades. From the memory of the robot, Number 775 was reading the past, in quest of the information he sought.

He had been right. The wise preparations had been made, offering a slender opportunity which was all he asked for.

The inner turmoil that had troubled him was over now. He had become an

outcast, fated either to fulfill a prophecy or doomed to die soon in dishonor. Time alone could tell which.

He shut off the telescope apparatus, since at present it was of no use to him. With calm logic he mapped out a course to follow. It was impossible to make anything like a complete plan, clear from beginning to end, but he did the best he could. He needed help which certainly the people of Mars would not offer. His only resource then, was to get assistance from Earth. Whether the Terrestrials would give him aid even if they were able, he did not know. And he had rations for only twenty-five days. He must make use of every moment.

First he remounted the ornithopter robot and caused it to walk out into the courtyard. Dismounting again, he made several simple adjustments of its controls, and did a bit of tampering with its motor and energy supply. Unoccupied and unguided, the flying monster flapped its tapered wings, climbed toward the sky and sped eastward.

Number 775 paused while it vanished among the stars. It would return to the city, but while landing, its motors would explode, tearing it to fragments. Many would think that he, Number 775, had been destroyed with it. A crude, simple bit of trickery, betraying an element of humor. Perhaps, even though he could not smile, this fragile demon of another world could appreciate that humor.

The ruse was good for it was several days before some one became suspicious and an investigation was launched. In that interval, however, Number 775 meant to accomplish much.

He proceeded with unhurried efficiency to get the rest of his plan into execution. In Old Faithful's workroom, far beneath the superstructure of the building, was a well boring straight down toward the core of Mars. At its bottom miles underground, was a chamber where a Gargantuan engine swayed and moved like a toiling genie as it converted the internal heat of the planet into usable energy.

Here Number 775 put his robots to work excavating a short side passage into the wall of the chamber. Their instructions once given them, they would labor on with only occasional attention. They wielded their flaming tools now with a zeal that would never be dampened by weariness, by desire for ease, or by revolt, for such traits had not been built into the intricacies of their structures.

NUMBER 775 returned to the observatory. He crouched in one corner, his eyes glowing with fascination as rolls of fine wire spun through a glittering instrument. His nerve filaments were imbedded in a jellylike composition that was part of the instrument. His activities constituted a bizarre travesty of a man reading an intensely interesting book. For on the rolls of wire were impressed the record of Old Faithful's achievements.

Number 775 was absorbing that record into his memory, preparing to make use of it—the Terrestrial alphabet and decimal system. A few words like "and," "are," "plus," and "minus," the meanings of which, by tedious study and comparison, Old Faithful had gleaned from simple mathematical problems flashed in Morse code by the Light on Planet Three; and a number of other words such as "yes" and "no," "coming," "comet," "storm," etc., the significances of which he had been able to guess at with more or less accuracy.

"Hello, Mars! Hello, Mars! Hello, Mars! Earth calling! Earth calling! Earth calling! 1, 2, 3, 4, 5, 6, 7, 6 and 8 are 14. 12 and 15 are 27. 9 and 7 are? 9 and 7 are? 9 and 7 are?"

That was one of the many messages recorded on the rolls of wire, not as script or printing of any kind, but as

actual, visual impressions, just as Old Faithful's apparatus had received them.

So it went on, pouring into the soul of the young Martian like a silent symphony of flickering signals which expressed in its grand way toil and effort that could end only in conquest of a goal or death. And so Number 775 memorized in the swift way of Mars what his sire had learned so tediously. He became conscious of the same gaps in his knowledge which the old rebel had felt.

What were the creatures of Planet Three like? What sort of civilization did they have? These riddles were still unanswered. And the words he did not understand were not truly words, for he had no conception of their sound values. Since he possessed no organs of hearing, he could not grasp sound as men grasp it. It was only a vibration which his instruments could detect and which his tentacles could feel in rigid objects.

Given time, he might have followed the work of his parent through to the success it promised. But that was out of the question under existing circumstances. He must depend on a shortcut, else everything that had been done was lost.

A DAY passed, two days. Number 775 completed his swift education. The tunnel the robots had been drilling into the wall of the power chamber was finished. At its end they had blasted out a crypt and had shielded it with metal. Now they were transferring into it materials, supplies and machines. It was going to be a little fortress and laboratory where Number 775 might hide and complete what he had set out to do.

On the evening of the third day he was prepared for his isolation. Through the telescope he took a final peep at Earth—gray-green, strange, appealing, and enigmatic—hanging among the stars.

He saw the Light as it flickered frantically between the horns of the crescent. He was even able to decipher a few of the words. He ascended the battlements of the workshop and gazed with brooding eyes out across the desert into what he knew might well be a last glimpse of his native sphere. Then, with his servitors, he dragged into the green-glowing well and floated lightly down to the power chamber, seemingly supported against a swift fall by the substance of the illumination.

Above the engine the well was sealed by a hinged mass of metal. The robots and their master entered the vault that had just been excavated. A second mass of metal, the outer surface of which was deceptively like the substance of the power room's wall, closed behind them.

A switch was thrown. In response, the workshop of Number 774, far above, geysered up in a terrific explosion. Ironically Number 775 had carried out the command of the Rulers. And what better place might he find to conceal himself and his activities than in a chamber buried far beneath its wreckage? He knew that even here he was not safe from detection; but circumstances offered nothing that could be more secure.

Time, measured by dwindling stores of food and water, had become his most valuable possession. In the calm way of his kind he proceeded to make use of every fragment of it. Two days went by. An intricate outlay of metal and crystal came into being under the delicate tentacles that he used as hands. He could still get power for it from the engine in the room beyond the door of his hide-away, but against the possibility that this source might be taken from him he had prepared an apparatus that looked like a huge Terrestrial storage cell. Beside him the automatons

toiled, more tireless even than he.

And at last he was ready. There was something delicate and sensitive out there on Planet Three that had to be energized. At least he hoped that that something was there. It all depended on whether his parent, Number 774, had really crossed the void as he had meant to do.

Number 775 moved levers and switches. Purple light flared up in the subterranean grotto, causing elfin reflections to leap and play on the glassy walls of fused rock. A crystal cylinder hung in its gimbals, balanced at a certain angle which coincided perfectly with the position of Earth. A timing device would keep the cylinder always trained toward Planet Three, even though the two worlds were not only moving through space but rotating on their axes. Finely modulated etheric impulses were stabbing unimpeded from the crystal through the mass of Mars. They penetrated the atmosphere and struck out across the millions of miles of emptiness.

The young Martian waited. He would soon know whether or not his sacrifices had been in vain. Fear he did not feel, yet there must have swarmed in the grotesque flesh of him a thing that was very near to religious awe. Perhaps the mystery was about to be exposed; perhaps it was not.

There! The shimmering luminescence in the vision globe before him seemed to coalesce, to congeal into coherence. Coming out of the purple haze were the concrete forms of another sphere. The gap was bridged. An impenetrable curtain had been torn down.

Number 775 was looking upon things which Number 774 had given his life to see. The interior of some bizarre habitation. A young woman, an elderly man. No, the being of the Red Planet did not have any such complete knowledge of what they were. He saw only that they were alive and very hideous, and that, after a little, they moved with quick, excited movements. There were devices in the room, several that he recognized as having been manufactured by his own kind. Other fine etheric impulses were coming back from Earth now, bringing this picture to him.

So much was being revealed to Number 775 that he could not retain complete control of himself. His gray, flattened body trembled a little with excitement, but that was all.

A switch trembled in his grasp, making and breaking contact as he spelled out phrases in Morse code:

"Hello, Earth! Hello, Earth! Hello, Earth! Mars calling! Mars calling! Mars calling!"

If these were the People of the Light they would see and understand his signals. Yes, they did see; for when the proper interval which the impulses needed to reach Earth and return had elapsed, the Terrestrial creatures seemed more startled than before. Number 775 could not hear, but the vibrations of the sounds their movements and voices produced were brought across space to his touch sense.

The instrument which his sire, Old Faithful, had carried to Earth was no mere television and signaling apparatus. It was an intricate probe. It detected all physical disturbances around it; it could even capture the almost impalpable pulse of the atoms in its vicinity, identifying the elements and compounds which they composed.

The probe was more wonderful than anything which, as yet, had been invented on Earth. But it was not omnipotent. It could not span the gulf between minds. The problems which faced Number 775 still loomed gigantic.

Now the larger of the two Earthians was jerking his arm up and down, forming code symbols in an unfamiliar but decipherable way:

"Hello, Mars! Hello, Mars! Hello, Mars——"

Number 775 needed help from Three. Somehow he must tell those creatures across the void what sort of assistance he required. Grimly he groped for words, of which he knew so very little. Then he seized the signal switch, spelling out a clumsy message——

Across the desert above, a pair of ornithopters were speeding toward the ruins of Old Faithful's workshop.

III

GLOWING RED with the heat of friction, the space projectile hissed down through the night. Gradually its course flattened as it neared the ground, until, supported by its retractable airfoils, it skimmed like a plane above the Arizona desert. A town passing beneath sent up a friendly blur of radiance. The craft sped beyond it for several miles, until a group of buildings came into view. From close above them it settled, landing with an abrupt jolt a hundred yards beyond their boundary wall.

The projectile's pilot sighed and grinned, expressing weariness, relief, and satisfaction—especially satisfaction—for he had done a thing which no man had ever done before. With fresh vigor he clutched the bolt which sealed the cabin and jerked it up. A duralumin panel opened, admitting night air to cut the thick stench of machinery that hung like a miasma in the cramped interior.

The man clambered forth, then paused, and for a moment surveyed the largest of the buildings which loomed phantasmal in the moonlight. Since its erection it had never ceased to provoke in him a kind of subdued wonder. Its architecture was modern Spanish except for the huge dome of metal which surmounted it, imparting a touch of the unEarthly that was not feigned. The plans for the dome's construction and for the telescope it concealed were among the many useful gifts from another sphere.

Briefly a frown of puzzlement trembled between the young man's brows. A pyrotechnic display of the same character as an aurora, but vastly more magnificent, should be leaping and throbbing about that dome now as signals were flashed to the red star above. But instead all was at rest—portentously so.

The man hurried forward and entered the inclosure. He spied a figure in white coming to meet him from among the jumbled shadows.

They were in each other's arms then, the girl and he. It was as simple and trite and humanly sweet as that. He had faced death out there in the void, and he had come back. For nearly a minute they didn't say anything; they didn't need to.

At last he essayed a small, unsteady chuckle. He had forgotten about the circumstance that had puzzled him, for vivid memories and experiences were demanding expression.

"That much is done, Yvonne," he said. "The Moon has been reached. Seems funny that it's I who did it. Everything was funny and glorious out there. I wish you could have seen the stars and the Sun with the atmosphere ripped away from them, and the desolation, and the craters. Some of those craters have a trace of air and water left at their bottoms, enough to support queer little plants. They look like pincushions of blue plush!"

He laughed softly with his cheek against her hair. It was as though his mind was a trifle blurred with bewilderment and he was groping for reality. "It's true that I've been gone from Mother Earth for a week, isn't it, sweetheart?" he asked almost plaintively.

It was her turn to be amused, but

she was not, for she sensed how he felt. "Yes, Jack," she told him simply. "Did you receive our messages?" Yvonne Cantrill had allowed her husband to make his little boast. Now she swung the conversation to a subject more important even than the conquest of the Moon.

Jack stepped back, startled. "Yes! Of course!" he later cut. "I was near the base of the crater Copernicus, then. I could see the dome flickering easily enough through my telescope. The first message still there! Even one flash—just one—on Mars, at the spot from which Old Faithful used to signal. The second message, three days later, told about a different kind of flash that nobody understood. And both! I saw how you folks were speeding it on, trying to make Mars show a bit more attention! Why aren't your dad and Radeau still signaling? It struck me as queer when I landed. What's the matter, Yvonne? Even if it does take time to raise an answer, we aren't going to quit, are we?"

The girl shook her head. Some of her usual gayety had returned. "No; we're not going to quit," she stated with cryptic mildness. "But I guess the dome is out of date. Father and I made a discovery about an hour ago. We called Myron in. They're both inside this minute watching over it. It's the Vase."

Jack Cantrill's lithe, young frame bent into an attitude that approached a crouch. "The Vase!" he breathed huskily. "What about the Vase? Tell me the rest of it!"

Yvonne's head cocked pert to one side. Her pretty face wore a smile of mischief, though her eyes were serious. "Wouldn't you rather be shown than told?" she teased.

"Of course," he admitted.

"Then come along; and don't expect to be disappointed!"

THEY ENTERED the building and traversed a short hall, lighted by a green radiance that formed a part of the air itself. Before the entrance to a large room they came to a pause. For Jack Cantrill, and, in fact, for all humans who approached it, that room possessed the mystic aura of a sanctuary. Mingled incongruously with its comfortable Earthly furnishings were the things which Old Faithful had brought from Mars. There were models, charts and instruments resting in showcases about the walls. Odd mechanisms suggestive of the fourth dimension adorned shelf and corner, glittering in the soft, green glow which itself was un-Terrestrial.

However, Jack Cantrill did not view the room to capture its composite effect now. He did not so much as notice its two occupants, Dr. Waters, Yvonne's father, and Myron Radeau, the astronomer; nor did they notice the quiet approach of his wife and him.

The eyes of the four people were centered rapt on a Martian apparatus which stood on a small table at the center of the floor. It was a device the functions of which had never previously been determined. The Earthlings had appropriately dubbed it the "Vase," for it was shaped very like one. It had a broad, curving body, above which a slim cylinder, closed at the top, extended. The pearly surface of the thing was furred by myriads of tiny filamentlike projections between which were set many minute crystals.

Jack Cantrill had seen the Vase often before, but never as it was at present. In two ways it was different: First, a metal arm, jointed, pedestaled and equipped at the end with eight digits which could serve the purpose of fingers, had folded out of its side and now and jerked now in what seemed odious gestures of excitement.

Second, deep within the translucent substance of the Vase a golden flame burned. For a moment it was steady,

then it began to throb like the pulse of a living creature. Now quick, now slow, that pulse was beating out words in Morse code!

Flash—flash—flash——

"Man of Earth coming Mars. Yes-yes-yes. Man of Earth coming Mars. Yes-yes-yes. Man of——"

A minute, perhaps, was consumed in transmitting that much. Then, abruptly, ominously, the golden fire died out; the message broke off and the clawed arm retreated into its socket. Once again the Vase was inactive, as it had been for more than two Earthly years.

Myron Radeau, a ponderously bulky savant of middle age, was the first to find his voice. "Damn it!" he grumbled. "Just when we're getting ready to teach Mars something it walks out on us!" His disgust looked feigned; even when angry he could not rid himself of a slightly ludicrous expression of joviality. He glanced about and saw Cantrill. "Oh, hello, Jack!" he greeted. "Dr. Waters, the lady has brought us our Moon voyager!"

Young Cantrill brushed aside the questions concerning his journey which the two scientists directed to him. He grinned. "What's the use of bothering about the Moon when we're being invited to Mars?" he demanded with an attempt at lightness. "We can't go that far yet, but it's nice to know we're welcome. A new signaling apparatus! Gosh! Yvonne was telling me. How does it work? What is its principle?"

Dr. Waters' wrinkled face was grave. "We don't know yet, boy," he said. "Maybe it isn't actually important if the device works again as well as it seemed to until it stopped. In the last hour we've answered messages that came to us and it appears that, crude though our method of signaling was, we were observed and understood. The conclusion is that some kind of television eyes were directed upon us.

"The crystals studding the Vase may be their lenses. The fine threads projecting from its surface could be a form of sensitive detector. We perhaps can't even guess what this machine can do. Yet by the interval between message and reply we can tell that the processes by which it functions depend on impulses that travel at approximately the speed of light;

"When I think of all the years I spent trying to make Old Faithful understand the rudiments of English, this apparatus seemed too good to be true. Just a hundred big searchlights we had then to flicker out the code, then the dome, and now this! If it works again—if it hasn't broken down——" The old scientist was worried; his hands shook.

His companions were reassuring. "Most likely it hasn't, dad," said Yvonne. "It hasn't been more than a minute since it stopped." She pushed him into a chair.

MYRON RADEAU leaned his ponderous bulk against the table on which the Vase stood. He was sweating profusely and his eyes were bright with excitement. "When you made that crack about being invited to Mars, maybe you weren't so far from the truth, young fella," he told Jack. "'Man of Earth coming Mars. Yes-yes-yes,' was repeated a dozen times since this outfit opened diplomatic relations."

"I didn't intend that it should be taken entirely as a joke, Rad," Cantrill responded. "Old Faithful understood every one of those words, at least vaguely. He knew what 'Man of Earth' meant, from our many references to ourselves by that name. 'Mars' was equally clear to him, and he understood that 'Yes-yes-yes' signified affirmation, since we always O. K.'d his arithmetic problems that way.

"He was a bit dim on 'coming,' but

he used it successfully in the message he sent just before he made his hop to Earth. Probably the Martian or Martians who have taken his place know as much about English as he did. So you see, I really believe we've been asked to come."

"Only we can't." Radeau commented ruefully. "We are years—possibly many years—away from anything as big as that, fella. The models Old Faithful brought us enabled us to construct the Moon ship; but going to the Moon, a scant quarter of a million miles away, is simple in comparison with leaping to Mars, thirty-five million miles distant at the nearest."

Jack nodded; but his wife, ever eager for some new angle on the problem they had so often discussed, asked Radeau for his reasons.

"Well, lady," he said, "first there's the matter of fuel. The quantity needed for the Martian trip isn't in proportion to the distance traveled on the basis of the Moon trip, of course, since a projectile could coast most of the way on momentum alone. Still there is a difference, which, when added to the weight of the ship would make the load prohibitive. The oxygen problem would be taken care of by our Martian air purifiers; but a longer hop means more food and water, and even though rations can be highly concentrated, they would add something to the burden. More damnable awerdupois."

Radeau glanced mournfully down at his waistline. "Last but not least, there's the matter of space navigation. We know very little about it even after Jack's short adventure. And our mathematical theories aren't down to sufficiently fine points. We certainly would have plenty of chance to get ourselves hopelessly and fatally lost between here and Mars. Now is there anything wrong with my reasoning?"

None of his audience could mention an oversight. Having been over the question many times, they were well aware of the obstacles which faced any one who hoped to span the abysses between the planets. There was no comet to aid them as there had been in Old Faithful's time.

"But, pending further developments, and with the aid of the Vase, we should be able to teach English to the inhabitants of Mars within a year!" Yvonne enthused. "Jack, you didn't see what we were doing before you arrived. Look at the things over there by the wall—blackboard, chalk, books, pictures, everything! We were getting ready to start an exclusive school for Martians!"

Cantrill nodded and said "Good!" rather absently, for his mind was on another, deeper matter.

Myron Radeau fumbled about, arranging the school paraphernalia.

A throaty drone from somewhere out of the distance found its way into the building.

Dr. Waters' worried expression changed to a smile. "Newspaper reporters flying over to talk to you, Jack, I think. Yvonne and you had better go entertain them. We don't want them snooping in this room yet, and Myron and I have to watch hopefully for anything that may turn up."

The Cantrills made their way to a little portico which overlooked the area where the flier would land. It hovered in the air now, settling gradually through the night like a pinioned monster of the region of darkness. It was not a plane. It flapped its wings like a bird.

Yvonne took her husband's hand. "It was all so quaint, so urgently insistent—that 'Man of Earth coming Mars.'" she said. "I almost wonder——" She paused, leaving a dim idea unexpressed.

"I know," the man answered.

"The world is back of us in anything we may decide to do," she added. "Old



A luminous needle that shone through the gloom trembled and turned as it pointed to the ornithopters approaching, invisible in the world above.

Faithful brought us the ideas for so many inventions that every one is enthusiastic. Why, we could get millions of dollars for research, no matter how ridiculous our aims seemed!"

"I know," Jack repeated thoughtfully.

The ship had landed. Men were advancing toward them to get news of the Moon flight.

Neither of the Centrii was as yet more than vaguely aware of their presence, however. Their minds were far away, filled with questions, deep longings, and fantastic memories. They were thinking of a form, gray, horrible, fitted with tentacles, which reposed now in a preservative pit lath in a museum—Oh! Faithful. He had not been a man; yet a dream, the urges of which any human might feel, had been born within him. He had tried with everything he possessed to make it come true. Now his vision had been handed on to others, some of them human, one of them not.

Above Yvonne and Jack shone a reddish star. Symbolic, somehow, of high courage, it called to them, as few things before had ever called——

IV.

NUMBER 775 had flashed out his appeal for help, fully conscious of the obstacles to be surmounted. He was not even sure that the clumsy message he had spelled would be understood; but he had stuck to it, hoping that the words were arranged comprehensibly, and that, by repetition, the idea of emphasis would be conveyed. He had answered all code signals which the Earthians had contrived to make by swift and slow jerks of their hands; for he wanted them to be aware that he could see them, so that they might use their opportunities to best advantage.

He had studied in minute detail each of the bizarre wonders the vision globe revealed to him. He had noticed that those two weird creatures of Earth were as excited and eager as himself and the knowledge must have pleased him. Conscious of the value of time, enthralled by the riddle of Three, he had taxed his brain cells in an effort to interpret all the novel impressions his senses and instruments registered.

It is not to be supposed, however, that he had become so lost in Terrestrial wonders as to forget to be wary. While danger threatened from any quarter, part of him would always be on guard. So, when a frosted bulb amid an array of instruments began to glow with the shade of infra-red—a color which his Martian brains could detect—he was warned. Ornithopters, which bore vengeful agents of the Rulers, were approaching, to investigate his disappearance. Quickly, yet without haste, he shut off every mechanism in his retreat. A remote-control switch enabled him to bring the engine in the power chamber to a stop.

His precaution had a purpose. The ornithopters carried detectors which could pick up the delicate etheric disturbances his machinery produced, just as his instruments could feel the static created by their motors. As long as the equipment he had built was not approached closer than a hundred miles he was safe, for the beam of energy groping across space was tight; there was little diffusion or leakage to betray him. But now there was danger. Since his detectors were keener than any which could be conveniently packed into a flying robot, he felt sure that he had not yet been discovered; still, whatever their shortcomings, the agents of the Rulers were far from fools.

Number 775 squatted like a hiding cat in one corner of the grotto. Except for a fading fluorescence from the vision globe and the ruddy gleam of the detector bulb, there was almost no light. It twinkled slumberously on the forms

of the automatons, standing with the funereal grandeur of guardian genii about the walls.

Their master did not fear death, yet his desire to live was as strong as that of any healthy young animal or human being. More important, if he died now there would be no one to carry on his work; for on a sphere whose every inhabitant is cast in a fixed mold of custom, no one would wish or dare to do so.

He knew Mars for what she was—disciplined, cold, grim, matter-of-fact; stubbornly unready to believe anything novel; for inspiration, the faculty which had made her greater by far than Earth, in mathematical, physical, and inventive sciences, was dying out among her ancient and over-routinized people.

Though her efficient organization had kept her pulses flowing, it had played her a trick. She might accept the benefits of interplanetary communication and travel, once they had made a tangible approach to reality; until then, however, nothing could shake her granite-hard conceptions of the possible and the impossible, of the useful and the useless.

Aware of these facts, Number 775 waited. A luminous needle that shone through the gloom trembled and turned as it pointed to the ornithopters approaching invisible in the world above. The flying robots landed to make a close inspection of the ruined workshop. The needle warned Number 775 of their every shift in position. Would the agents discover him? It would take less than a quarter of an hour for their weapons to blast the debris from the well.

They did not attempt it, however. After a time the needle jerked as if uncertain, then swung to one side. The ornithopters were leaving. Number 775 had not been found. A reprieve had been granted!

Not until an hour after the detector bulb told him that danger was over, did he reopen communications with Planet Three.

THERE WERE four Earthians now in the room which the vision globe pictured. That they had made preparations to teach him more of their language was evident to the Martian almost at once. He saw their paraphernalia, their charts, their models, and the black surface upon which they made marks with a small, white cylinder.

His education began in earnest now. As the days went by his teachers worked in shifts of two—Dr. Waters and Radeau, Yvonne and Jack—for they needed sleep, and their pupil seemed tireless. Number 775 allowed himself only an occasional brief doze; being a Martian, that was all the rest he required.

The Earthians made dots and dashes on the blackboard while they gestured them out with their hands. They wrote the words represented by the symbols underneath, carefully placing each letter so as to indicate clearly with which code symbol it corresponded. They indicated the meaning of the word to the best of their ability by presenting a concrete example or by pantomime, and last but not least, they pronounced the word orally, working on a dim hunch for which Dr. Waters was responsible.

Number 775 had neither ears nor vocal organs suitable for speech; but his instruments, working through the probe on Earth, were recording those sound impressions for study and comparison.

First he learned concrete nouns such as "chair," "table," "wall," "food," "water," etc. There was no trouble here; it was only necessary for the object to be pointed out and the word spelled. Number 775 captured the meanings easily and his memory retained them with almost the perfection and permanence of a mechanical record.

Next came simple verbs: "Walk," "stand," "sit," "eat," write," and many others. Again there was no trouble. A pantomimic illustration of each act was enough to convey the significance of the words. Tenses and moods would inevitably present difficulties, however, when the time came to make actual use of the verbs.

Color adjectives such as "red" and "green," and adjectives of shape and size like "round" and "flat," "long" and "short," "big" and "little," also presented no problem; though the former might cause some confusion because Earthly eyes do not see color quite as Martian eyes do.

Pronouns were puzzling; but since a noun could always be substituted there was no immediate probability of trouble. "In," "to," "for," and other prepositions, Number 775 was able to grasp vaguely, and drill would improve his ability to handle them.

Words whose meanings were hard to illustrate in any obvious form were real riddles. "Idea," "assist," "think," "hope"—their meanings were too abstract for a Martian to grasp without long association with an Earthly language.

"Speak" and "talk" were words which conveyed to Number 775 nothing with which he was directly familiar, though he hit upon the guess that they referred to some peculiar Terrestrial method of communication. This set him more strongly than before on the trail of the vocal sounds his teachers produced. He perceived the relationship between the written words and the sound vibrations the probe brought to his touch sense; he studied the impressions of those vibrations preserved in his records, his brain busy with an inspiration that might one day be useful.

The humans succeeded in telling Number 775 that they called his probe the Vase. They touched its shell to indicate their meaning, and the filaments with which the device was coated picked up and transmitted the impression of that touch across space. Number 775 must have been glad to know the name of his instrument. The probe's prehensile arm, the movements of which he could control, enabled him to handle Earthly objects almost as though he were actually on Planet Three.

The remarkable powers of the mechanism permitted Number 775 to do many things of which the Terrestrials had no inkling. He learned what substances composed their bodies from atomic radiations imperceptible to human science; his curiosity even led him to analyze the smoke of their cigarettes during some odd moment when no message was coming through.

And so his education progressed; questions, statements, commands—gradually the use of each became clearer in his mind. Number 775 had no natural aptitude, as a baby has, for learning languages; but, given time, it would have been comparatively easy for him to assimilate the strange art now,—far easier than by exchanging blundering light signals with Earth as Old Faithful had done.

The names of his teachers were given him, and he was soon able to distinguish one from the others. Jack, Yvonne, Rad, and "Doc." Yes, he could recognize them.

It was fantastic and intimate and thrilling to those humans when the Vase brought them the curious drill sentences of their pupil.

"Hair of Jack red. Mars red. Yvonne little. Rad big. Rad round."

The fat scientist was found all right! It was funny; they laughed, but their flesh pockered with awe, too.

Number 775's eager efforts had one immediate purpose—to better express his constant pleas for help. All through his period of study he kept up his demands. As his knowledge grew, "Man

of Earth coming Mars," became "People of Earth, come to Mars!"

His teachers found the means to tell him that it was impossible. They showed him charts and space-ship models, endeavoring to point out their obstacles. They signaled: "People of Earth cannot come to Mars." And finally they asked the reasons for his constant pleas: "Why? Why? Why?"

Fifteen precious days had passed since he had opened communications. He had rations for less than a week. The fact must have colored his answer.

He knew by now that "Why?" signified interrogation, so he made an effort to explain. But since "need" and "assistance" were beyond his reach, the best he could do was to repeat his demand and hint vaguely: "No food. No water. No people."

He could appreciate the difficulties of the Terrestrials. He could not have surmounted the greatest of these—power—himself. For once Number 775 had become unreasonable. He but leaned on the slender hope that Earthly genius might find a way to leap the void. He was not thinking of his own life, but of his parent's vision, and of the possibility that, alive, he might help to establish a permanent contact between spheres.

So, with the insistence of a stubborn child, he kept emphasizing the central thought in his brain: "Come! Come! Come! Come!"

V.

THE endless appeal had its effect on the four Terrestrials. They read it as it flickered in the depths of the Martian pedic. The prehensile arm jerked and spun in gestures that were almost human.

Dr. Waters and Radeau were finishing their shift on the morning of the fifteenth day since communications had been opened. The weather was insufferably hot and they were very tired. They were waiting for the Cantrills to come and take over the job for a seven-hour period.

"This eternal invitation business has got me going," Radeau confessed. "My nervous system is as jangled as if it had been put through a meat chopper."

Dr. Waters was quite ready to agree. "If some revered ancestor of mine were pleading to be exhumed, I would probably know better what to do," he said in a wan attempt at humor.

Just then Yvonne and Jack entered the room. The two scientists studied their faces searchingly. Young Cantrill's jaw was grim; his wife's face was pale but defiant.

"Hello! You two look unusually bright to-day," Radeau greeted with faint sarcasm. "Have you got something up your sleeves?"

"I think we have," Jack stated. "I think part of the problem of going to Mars is solved."

Radeau and Waters exchanged glances. "You mean that, Jack?" the doctor asked, his old features twisting into an expression that was half quizzical, half hopeful, yet almost alarmed. "Does he mean it, Yvonne?"

"He does; we both do," the girl affirmed. "We believe we have the solution to the fuel problem at least. This is the idea: Send rockets to the Moon—a number of them—each loaded with all the fuel it can carry. Then collect the reserve tubes, attach them to one rocket and start for Mars! You see the point, dad?"

Waters nodded, but without much enthusiasm. "Lunar gravity is one sixth that of Earth. It wouldn't tie a space ship down as much, even though there would still be inertia with which to contend. Consequently the rockets could build up greater speed with less energy expended. The plan is good as far as it goes."

"It's all utter suicide," Rideau commented. "In the first place, if the trip to Mars were actually achieved, it would be impossible to return, not only because no reserve fuel could be carried, but because the gravity of Mars, twice that of the Moon, is sufficient to prevent a start for so long a journey. Secondly, jumping off from Luna doesn't clear up the job of navigation. I tell you, it's suicide."

Cantrill shrugged a flash of anger. "Some one's got to make a beginning, don't you?" he demanded, his fists tightening. "I'll admit the trick of guiding a ship through space 'earned' unless unavoidable, but—" Faithful came here without any idea of how he might return. Have we any less right than he? We're being asked to come to Mars. I'll admit we don't know why; we don't even know that the motive is friendly; but judging from the many beneficial inventions Old Faithful brought us, it must be. Certainly it is a good motive from some point of view.

"Perhaps preparations has been made to receive us. Maybe conditions of which we can know nothing are now favorable for the trip. Don't you see? Martians aren't fools. What would be the sense of telling us to attempt the hop if they expected us to get lost in space?"

Myron Rideau, the fat scientist, was an adventurer at heart; he wanted to believe what Cantrill so emphatically presented. The arguments were good, if vague. Rideau signified his capitulation with a chuckle. "Sorry, Jack," he said. "Thank Heaven you're right and I'm wrong. I want to do this thing. [illegible] Hour about, eh, Doc?"

Dr. Waters, whose life had been devoted to the possibility that worlds might one day establish contacts as intimate as those existing between nations, could hardly have been expected to raise a protest when a way of so promised could be dimly seen. He merely smiled an elfin smile, and said: "Eight or nine rockets will be needed. We'll send our order in to the manufacturers right away. Financial backing, I think, will be easy enough to find."

"I'm sure we won't need to have the rockets made," said Jack, grinning broadly now. "The publicity Old Faithful gave us has got every man, woman, and child wild for developments and willing to do his small bit to help. There are more than a dozen Moon ships finished or near completion all over the world. It should be simple to win the cooperation of the owners, when they learn what we're attempting."

"Better and better," Dr. Waters enthused. "But who of us will accept this Martian invitation? Not all of us can go. Food and water would weigh too much, and the air purifiers would have to be larger. One person would be best."

"Two," said Yvonne softly. She took Jack's arm, a small defiant smile trembling on her lips. "Anybody object?"

No one did, not even Jack Cantrill himself. He loved his wife; all their interests and desires were mutual. Their destinies were the same. And Dr. Waters, Spartan by nature and training, was too earnest in his wish that the prophecy of interplanetary traffic be fulfilled, and too conscious of the glory that his daughter might achieve, to raise any obstacle. His seamed face whitened, but he returned the girl's smile.

"Bravo!" Rideau cried jovially.

In a moment a message was speeding across the void. "We come! We come!"

After a short wait the reply was received. "Yes-yes-yes. Bring Vase! Bring Vase! Yes-yes-yes."

Thus the decision was reached.

VI.

FOR THE MEN, the three days which followed were hectic. There were flying trips to this city and to that, radio-vision calls spanning half a world, publicity agents to interview, prospective Moon voyagers to be persuaded and certain mechanical alterations to be prescribed for the rockets. But the plan was put through almost without a hitch.

Only Yvonne Cantrill did not take part in the feverish preparation. She remained at the observatory, almost hidden, seeing few of the news reporters who were sent to interview her. She continued there to communicate with the Red Planet, endeavoring to increase the small store of words that could be used. One thing she did that had not been thought of before: She held a photograph of Old Faithful's preserved body close to the Vase.

Did the knowledge which the gruesome relic conveyed arouse grief within Number 775? He gave no sign.

Nearly twenty-five days had passed since he had become a rebel. His food and water supply, which he had conserved so stringently, had dwindled until very little remained. When that was gone he had but one resource left.

Number 775 still found the energy to work, however. He was constructing a device new in the inventive annals of his planet—something that might bridge the widest gap between worlds: Hope and Fear. And for another purpose, intricate calculations rolled hummed and buzzed under his guidance.

The day arrived when the Terrestrials were ready for their venture. From points widely scattered over Earth, eight rockets leaped up through the atmosphere and started Moonward. None of them was manned. Radio impulses carried on tight beams would guide them to their destination, a small Lunar crater carefully selected beforehand.

The ninth rocket, the only one that would bear passengers, waited until the others had gained the cold, airless freedom of space. It rested a half mile distant from the Waters-Radeau Observatory, the clear morning sunshine glistening on its tapered hull. It was a huge thing now, for many segments of tubes containing the same kind of powdered fuel which Old Faithful had used had been attached to the tiny passenger compartment.

Few emotions were displayed in the leave-taking of the adventurers, save gayety, half assumed, half real. Climbing into the padded cabin, Yvonne blew a jaunty kiss at her father, and he returned it. Jack Cantrill waved and grinned. Bulky Radeau made himself look as ridiculously solemn as possible and offered to go along if they thought they needed an anchor.

Then, amid a thunderous, crackling roar that left a stupendous column of fire hanging in the air, the little ship leaped skyward. Crushing acceleration that made breathing almost impossible wrenched muscles and tendons that brought a tortured sweat to the brows of the voyagers. But it passed. Except for bruises and sore, aching bodies, they were whole and conscious.

The crater on Luna was reached without incident, the forward rockets breaking the fall, which, because there was practically no atmosphere to produce a retarding effect, was a dangerous one. The other rockets, bearing fuel, had already arrived.

As soon as they had rested a bit the Cantrills donned space suits and began to attach fresh fuel tubes to their craft. They toiled like Trojans, and actually enjoyed themselves. Something in their emotional structures must have gone numb, allowing them to be as carefree as a group of joyous youngsters at a picnic.

The radios with which their helmets were equipped enabled them to converse just as if they had been at home. They laughed at their great strength, pitted against the feeble Lunar gravity; they made good-humored fun of the terrific mountains and tumbled rocks that loomed above them casting shadows sharper and blacker than the fangs of fiends.

Yvonne exclaimed over the fine-weather sky in which the stars, and the Earth, and the blazing, corona-ringed Sun shone. And here and there, scattered over the floor of the volcano, providing the girl to gleeful wonder, were clusters of low, bluish vegetation, dry as ashes—the only vegetation that the Moon could support.

Within two hours the ship had made its final spearward plunge. The flame of the exhausts and the acceleration they produced were even fiercer this time, for Jack gave his rockets all the fuel they would take to hail it up speed. The narrow compartment in which the voyagers were confined reeked with heat and a smell like cinders. Reclining on the padded floor, they struggled to keep the readings of their instruments within the safety margin. Somewhere their senses must have left them entirely—they could not be sure—but when they recovered all seemed well.

They dragged their way painfully to a window from which they could look back at the panorama behind them. Earth was there—a mottled crescent of gray-green, hanging beyond the star's grandeur of the Moon. It was beautiful and inspiring against the deep, hard blackness of space.

Something was running through Jack Cant's head. A fragment of song. "Tupperary." Almost unconsciously he began to hum it.

Then he chuckled. It was a chuckle that displayed many angles of feeling. Awe was in it, mixed with a touch of sheepishness and puzzled bewilderment.

"Is it real, Jack?" Yvonne asked. "That we are here, I mean?"

"I guess so. Do you care?"

"No. I'm glad. I don't know what's going to happen, but I'm glad." Small wonder that the Martians want to penetrate the mystery of our planet. It's so glorious hanging there in the vacuum. I'm almost wondering what's up it myself."

THE SPELL of adventure had taken possession of them. It throbbed in their veins like an elixir. Courage and fear had no place in the scheme of things now; the two sought only to live and enjoy each moment to its end and passed without realizing the thrilling ecstasy that possessed them.

"By the way, what happened to Marg?" Jack demanded suddenly. "They haven't given us a sign since we left Earth."

Yvonne glanced across the cabin to the place where the vaselike probe was securely strapped to a stanchion. The translucent filaments that coated it sent back pearly reflections, but the thing gave no indication that it was more than an idle ornament fashioned by an artisan not of Earth. No goblin fire pulses in it now. Its arm was telescoped into its body.

"It's ominous!" Yvonne burst out with make-believe concern. "I wonder if the jolts this ship has been going through didn't break something?"

Her lightness was a trifle misplaced. Both she and her husband felt their first twinge uncertainty, and a suggestion of something familiar and dependable was gone.

VII.

FROM FAR AWAY on the Red Planet, cold eyes had watched the beginning of their adventure and had scanned their instruments critically.

The mind lock of those eyes knew enough of Earth numerals to understand. With mechanical aid, it had made swift calculations, deciding that conditions were as good as might be hoped for.

Number 775's rations had been consumed. He was asleep now, in a sleep that was like death. Only a metal giant stood beside him on guard, faithful, dependable, waiting to execute a command.

It was very still in the space ship. The rockets had ceased to roar. The air purifiers made a soft, hypnotic sound. The voyage had settled down to a numbing routine, utterly monotonous. There was nothing to do except talk, sleep and think.

Days passed thus. Weeks. Earth became a star; the Sun dwindled. Mars grew to an ocher and gray-green bead ahead, but otherwise the aspect of the universe remained unchanged.

Whether or not they would reach their goal would soon be apparent to the travelers. Jack Cantrill took careful observations of Mars.

"We're a million and a half miles off our course," was his rueful comment. "With luck we might have come closer, though it is hardly likely that we could have achieved a perfect aim when we started out. This is the danger point. If we can make a correction, fine. If not, out we go into the asteroid belt—and beyond!" He essayed a good-humored wink. "Take the throttle, sweetheart. I'll see what I can do to coordinate the stabilizers."

They strapped themselves firmly to the padded floor, within reach of the cylindrical housing at the center of the cabin from which the controls projected.

"Portside rockets, three and four?" the girl asked calmly.

"Correct—I hope!" Jack replied. "I'm praying that it will give the necessary change of path to bring us nearer our target. Now—easy! Let her go!"

With a thunderous concussion the rockets came to life. Jack Cantrill's fingers darted here and there, seeking desperately to curb and direct insensate metal. Meter needles danced crazily. The ship swung, then began to reel and wallow.

"Ease up!" he shouted. The exhausts ceased to flame. But the craft was turning lazily now, end over end, end over end. It could do so forever here in this frictionless vacuum, while it hurtled on and on toward the brittle, sardonic stars.

"Let's think," Jack said wearily.

He knew that their precious supply of fuel must not be wasted in haphazard attempts at right matters. Already they were worse off than they had been before. With the craft turning like this, he could not even be sure of the exact direction in which they were going. He felt a complete human inadequacy. There was no formula that he could apply to their difficulties. Navigation of the immensities between worlds had points of minute exactness which no Earthly physical or mathematical science was as yet wholly able to surmount.

Their position, Jack reflected with grim humor, resembled that of a duck on perfectly smooth ice—only it was worse. The ether was more slippery than ice ever could be. In the absence of friction and gravity, with nothing to anchor to, the least thrust would send the ship skittering wildly, unless that thrust were made with absolute precision. And there was no logic for such precision here.

Over and over the craft turned. The Sun, sending brilliant stabs of radiance through the cabin windows every few seconds. A horrible nausea grew in the pit of Jack Cantrill's stomach.

"Guess we'll have to try it again, old sport!" he said presently.

"Just for the sake of trying?" she asked.

"Guess so. You're still not sorry you tagged along with me?"

"No!" There was defiance in the single word—defiance and a fierce sweetness. "But wait, Jack! What! Look!"

There was a grating, rattling noise at one side of the compartment, fantastic in its implication.

CANTRILL glanced toward the source of the disturbance. His gaze became fixed. The Martian signaling mechanism had come to life. The single arm of the device had shot out of its sheath and now tore at the straps which held the thing to the stanchion. Beneath its instrument [illegible] gray flickered the golden fire that was its voice: "Come! Come! Come!"

Dazed with surprise, the Terrestrials were still able to grasp its meaning. It wanted to be freed. As quickly as they were able, they unfastened their own lashings and scrambled across the reeling cabin. When they had unbuckled the straps which confined the probe, they clung to the stanchion, uncertain what further move to make.

The machine did not hesitate. Like a monstrous termite endowed with intelligence and one hand, it toppled and clutched its way to the controls. Beautiful and abhorrent and fascinating it had been; but now it seemed to have acquired a definite personality of its own. Like an antler's tongue its only appendage flashed here and there, moving this lever and [illegible] coordinated gestures. Jack started forward, intent upon giving assistance if possible.

However, the thing's imperative "Go! Go! Go!" left no doubt that his help was not wanted.

He clung to the stanchion beside his wife, watching with wide eyes. Neither of the two could have been sure afterward just how it happened. Set within a minute the ship was no longer reeling. There had been three short bursts from the rockets, which sent them tumbling [illegible] the little room; then a longer burst which lasted for minutes and held them breathless against the floor.

When it was over, Jack managed to gasp: "Mars speaking, I think. Maybe our faith wasn't misplaced after all!"

He was right. To stave off death by starvation and thirst, Number 775 had hibernated, evoking a power of his kind. An automaton had stood guard over him. The Martian had foreseen what might happen to the voyagers from Earth, and he had made preparation. The robot had watched their every move carefully. When trouble had come, the metal slave had awakened its master from the trance.

Number 775 had brought the ancient scientific learning of his race into play, working through the probe—finer mathematics than that of Earth, and a more minute understanding of physical laws. Thus the danger was removed. Luckily the space ship was near enough to Mars so that the impulses controlling the probe were not delayed too much in bridging the gap.

The mechanism had taken complete charge now, guiding the craft steadily toward its destination. After an hour the passengers had relaxed enough so that they could sleep.

When they awoke, the ship was screaming down through the atmosphere of the Red Planet. A hostile landscape, dreary and old and grand, was sweeping beneath its keel. It conveyed to the passengers the unease of tense uncertainty. What might the next hour bring them? They had no inkling of Number 775's rebellion against the laws of his race; and it was fortunate that they could not know the consequent obstacles that lay in their path. Yet they could feel the soul-wrenching

terror of their position. They were alone, without resource, on a strange planet. Nor had they any means that they could foresee, of returning home.

Dreary ocher plains rolling away to the horizon in an endless succession of dunes, twisted sentinel rocks rearing grotesque heads under the small sun: this was Old Faithful's native sphere.

The rocket passed over the gorge of a canal, cut like a straight scar across the desert. Upon its floor, twenty miles broad, the faint green of vegetation was visible, for it was spring on Mars. Glittering colossi were busy there. At sight of the space craft, they stood statuesquely, watching. Already, doubtless, the Red Planet's swift system of news-spreading was busy.

Several hundred miles to the west of the canal, the rocket settled toward the ground, landing amid a cloud of dust. Its retractable wings folded, and the Martian instrument that had guided it telescoped its appendage and became once more inert.

Through the windows Yvonne and Jack scanned the blasted pit—ringed with débris—where Old Faithful's workshop had stood. But to them the ruins could have had no specific significance, for they had lost their bearings during the rocket's swift descent.

The wait seemed long. A puff of vapor from the bottom of the pit and the glint of a shape toiling up the slope were the first intimations they received of coming events. A Martian was approaching the ship—a Martian protected by a hemispherical cage of glass that three metal limbs supported. They could see his gray body within the transparent compartment, and his ragged tendrils that manipulated the controls of the machine he rode. His great eyes, supported on tentacular stalks, craned forward, as if in impatience to glimpse the beings of another world.

Behind him trailed five humanlike travesties, twice as tall as a man. The six—the master and his automatons—approached until they were hidden from view by the curve of the rocket's hull. There was a thumping sound on the outer panel of the airlock.

Jack Cantrill's flesh betrayed a decided tendency to contract into goose pimples. "Well, Yvonne," shall we let our visitor in?" he questioned with an attempt at humor.

She laughed nervously. "What else can we do?" she returned.

Jack shrugged. "My gun's in my pocket!" he stated defensively.

The bolts of the twin doors grated. The inner panel opened for a moment, then closed. The inner panel swung gently toward them, folding back against the wall. The beings of two worlds were face to face.

VIII

NUMBER 775 stood in the doorway, mounted on his walking automaton that clicked and whirred softly in the pregnant stillness. The Earthians saw that he was like Old Faithful, though perhaps not quite as large. His body, shielded from the dense air of the cabin by the cage in which he rode, was circular, oblate, a trifle less than a yard across, with tattery appendages radiating from it in a manner reminiscent of the arms of a starfish. The gaze of his great eyes was cool and steady and intense. What his thoughts were, no human could have told.

The Cantrills had encountered a situation much like this before, when Old Faithful had arrived on Earth. The sensations were the same now, yet deeper, for they were millions of miles from home.

Jack flicked his palm up and down in a familiar message:

"Hello, Man of Mars!"

And the reply came back, not in code but in sound, flat, thick, and without intonation: "Ehh, Peepl uf Eart!

'Oo kom Mars! 'Es! 'Es! 'Es!"

English words—real English words—in spite of their almost unrecognizable pronunciation.

"God's all hemlock!" Cantrill burst out.

"God hemok!" the Martian echoed, mimicking his exclamation. "Ee talk! Ee mak machine fur talk! Ee hear! Ee mak machine fur hear! 'Es! 'Es! 'Es!"

It sounded like a boast, an outré boast coming from a monster that had no kinship with man in form. But probably it was not a boast at all; rather a mere statement of fact. It would be long before a Martian might grasp all the subleties of a human language.

For many moments the Terrestrials stared at their visitor, their faces blank with consternation. Then they saw how the miracle was accomplished.

Number 775 had bridged one of the widest gaps between Earthman and Martian. He had achieved speech though he possessed no well-developed vocal organs; he had achieved hearing of a sort, though he possessed no ears.

Over the pulped mouth orifice of his body was a curious complicated apparatus which evidently produced his voice, under the manipulations of a set of tiny levers which several of his tendrils clutched. A thin tympanum grasped in other tendrils could pick up sound waves, transmitting the vibrations to his touch sense, where they could be interpreted just as a deaf person can "hear" with his fingers.

The Cantrills grasped these details one by one. Many mysteries were cleared up. The Vats had been able to detect sound. Presently they saw how glorious and bizarre and human it all was. Funny, even. God hemok! Yes, funny!

A shadow flickered on the desert outside the ship, breaking the spell. Like pteredactyls of the Terrestrial Age of Reptiles, ornithopters were swooping to the ground, close to the rocket. Their attitude was menacing, while that of Number 775's robots was defensive. The Martians who guided the fliers were hostile then. Number 775 was visibly excited.

"The reception committee doesn't seem too trusting," Jack remarked. "Space suits, sweetheart. They may drag us out into the open and we can't survive in thetion atmosphere."

They donned their armor wonderingly. "Stan' here!" the voice of Number 775 commanded. "Ee go talk tem! 'Es! 'Es! 'Es! Ee kom! Ee kom!"

They watched him as he went forth. An arm of one of the ornithopter robots lifted the lid of his cage and hoisted him into the compartment at its top, where another Martian squatted. The two creatures remained motionless for a considerable time, their nerve filaments interlocked.

"I think it—that horror—is trying to shield us from something!" Yvonne stammered into the radiophone of her helmet.

Jack had sensed it, too. "If there's going to be a fight, we're not standing aside," he declared savagely. "We can't let him take it alone after he has saved our necks once already!"

TO SEE is to believe, even on grim, skeptical old Mars. Number 775 was telling his story and presenting his evidence. The ornithopter pilots saw the space ship and the creatures of Planet Three peering through its ports. Results had been achieved. The void could be crossed. The charge of wasted effort was removed. Old Faithful and his child were vindicated.

Number 775, remounted in the glass cage of his walking robot, hurried back to the ship. Its occupants admitted him.

"Is everything all right?" Jack demanded anxiously.

The Martian did not know what the

question meant, but he could guess what was in the Earthlians' minds. And since he could not say "All is well," because "well" was too obscure a word for him to have grasped in his brief period of study, he said it as best he was able, in another way.

A metal arm of his robot touched each of the companions reassuringly. It was a caress, almost. Though it awoke revulsion in them, they understood, even though they had no way of telling what conduct had gone on between him and his fellows.

He spoke then, the thick tones of his synthetic voice coming dimly through the helmets of the Earthians: "Watl. Watl." His lady within the cage was panting heavily.

"Eh? What does he say?" Jack queried.

"Silly boy," Yvonne chided. "Couldn't you tell that he was ill, or something? He wants a drink."

She brought him a glass of water. Robot arms slid from their sheaths and grasped the container, conveying it up through a double valve in the cage. Feathery palps lapped up the liquid greedily. Yvonne turned away, disgusted. It was hideous, bestial, just as every physical characteristic of the Martian was hideous and bestial. She was pitying him for that, and then all of a sudden her view broadened. Beauty was relative. The most handsome of Earthfolk was undoubtedly a nightmare from the Martian point of view.

The space ship was in motion. Number 775's slaves were carrying it eastward. In the sky the ornithopters circled like a guard of honor.

They reached the metropolis of Number 775's nativity. They were guided through its subterranean streets that glowed with a hazy green phosphorescence. They saw the great pump rooms and water reservoirs beneath the lowest level. They descended to the fire grottoes where colossal engines drew power from the still-flaming heart of Mars. An ornithopter carried them to the polar regions where the ice cap was melting.

The space rocket, at rest on the roof of the cubical structure which capped the entrance to the city, remained the headquarters of the Terrestrials, for in no other place could they find conditions to which they were accustomed. Everywhere they went they were confronted by cold, saturnine monstrosities who stared at them wonderingly. In the minds of the Martians, doubt was changing to awe, and yes, enthusiasm. Thus the Red Planet honored them.

During the afternoon of the third day, Yvonne rested. After dark Jack returned to the ship.

"We're going back home, sweetheart!" he announced jubilantly. "This Nun Se'in Se'in Fi' is going with us!"

She looked up at him, giving a little exclamation of doubt.

"Perfectly true," he reassured her. "Come, I'll show you!"

Out on the roof, he gestured toward the heavens, where Deimos, the farther moon, made its leisurely way among the stars.

"That's going to be our jumping-off place this time," he told her. "That satellite is so tiny its gravity is practically nothing at all. It was partly my idea to make use of one of the moons for that purpose, if a landing could be accomplished on such small objects. I tried to tell our Martian general manager about it, but apparently he already had the idea in mind. They're preparing the explosive in the laboratories below, right this minute.

"And out there"—his finger pointed toward a stretch of level ground several hundred yards west of their position—"they are making the rockets that will carry the fuel to Deimos. They are also building a kind of permanent shipyard and dock for some sort of limited commerce with Earth, until space

travel becomes better developed and technical difficulties are ironed out."

Arm in arm the two Earthians watched Mars at work. It was a thrilling spectacle there in the gray dusk. Gleaming genii toiled busily on the floor of the canal. Molten metal cascaded. Shadows, rusty and somber, shifted and bobbed like excited demons. A fresh dream had reawakened the ponderous energies of Mars, made sluggish by ages of grooved routine.

"What if they come to conquer Earth?" Yvonne asked.

Jack shrugged. "They won't," he predicted confidently. "This is home to them. They couldn't live on our world without artificial aids. Besides, we could wipe out any force they might be able to hurl across the tremendous void. Then, too, there is so much for both to gain by amicable relations—knowledge to be exchanged, products, doubtless. Maybe water for Mars, if some means is found to carry large loads. And finally, doesn't their treatment of us seem to show that they wish all our kind well?"

Within a week the departure for Deimos was made. Five hours later the rocket ship was hurtling back along the etheric trail it had blazed. The mottled opal of Mars was dwindling astern.

Number 775's great eyes gazed at it with nostalgic brilliance as he squatted close to a window.

There were wide abysses between Earthman and Martian that would never be spanned, yet now the Cantrills could capture a thread of his emotions.

"Do you know what a friend is, Man of Mars?" Yvonne inquired gently.

He looked at her. "Fren'," he pronounced toneles sly, and they saw that he did not understand the word. But the cold claws of his robot touched them in the same caress he had used before.

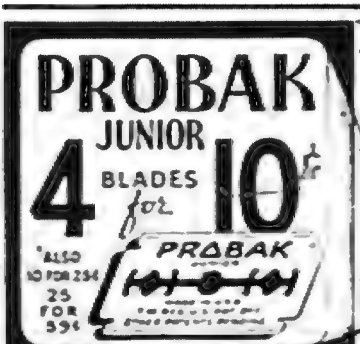
His attention focused on a star that shone through one of the side ports. It was Venus. "Onee go to Fart'," he said naively. "Jak, Evvonne. We go to worlds—un, two, tr'ee, fo' worlds!"

His companions saw what he meant, and grasped what lay back of it. They too were adventurers, always eager to seek out new mysteries.

And then, for the first time—they glimpsed the small mark tattooed on his flesh with red ink—a circle with a bar through the center. Old Faithful had been marked with just such a symbol.

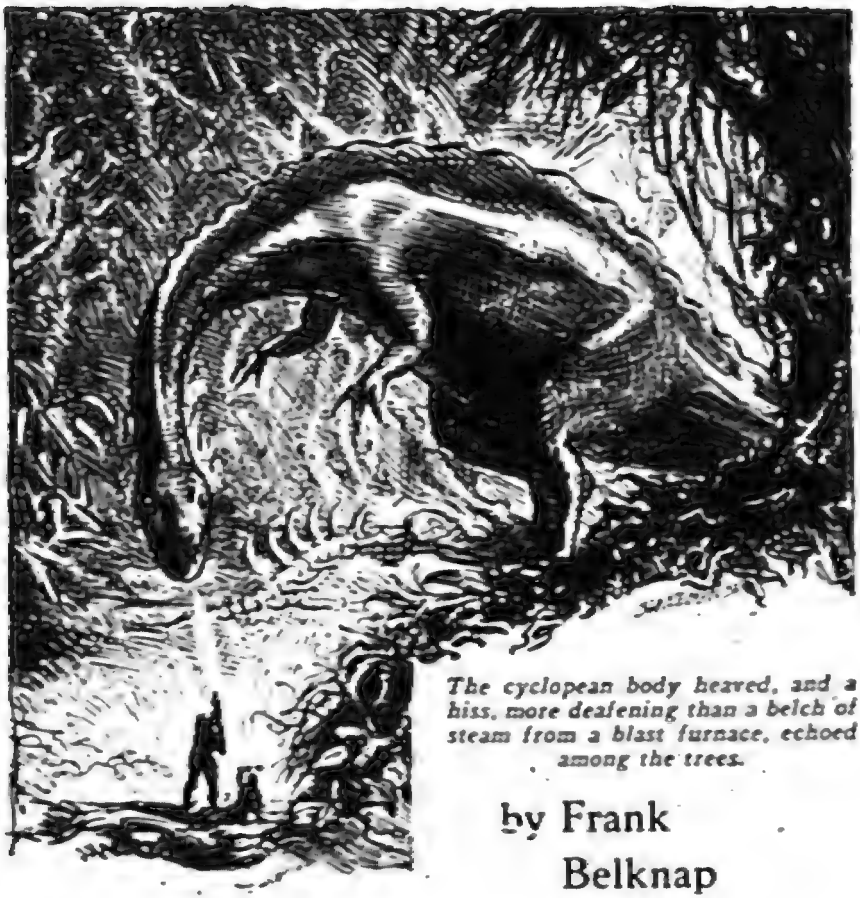
"I wonder," Jack mused, "if it's a clan or family name, or something. Then he'd be a relative of the chap who rode the comet's tail!"

They had not yet learned that this was Old Faithful's child, but they soon would.



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The cyclopean body heaved, and a hiss, more deafening than a belch of steam from a blast furnace, echoed among the trees.

by Frank Belknap Long, Jr.

Exiles of the Stratosphere

THE GREAT DOME glowed with a cold green radiance in the cold night. Miles above the Earth, in the lonely outer dark of the upper stratosphere, the Master of the Biological Destroyers, Patrol Unit G 78, passed grim judgment. Standing at the wide portals of the Dome at the summit of the Terrestrial ladder, he gazed with withering contempt at the kneeling man before him.

The kneeler, Lutatum, did not stir. But though he heard the judgment in silence, his nerves shrieked. For eight Terrestrial revolutions he had waited in the dark cell, while the masters of his destiny debated his fate. Banishment was the worst he could expect; a cold,

searing death the best. He did not fear death. It was mercy he feared.

The Master was cloaked in a lofty sheath of flexible black metal. He stood calmly impassive at the summit of the ladder, his lips glued to his teeth tenaciously, as though the saliva in his mouth had turned to sticky venom.

When he spoke, his words were as forked and merciless as the darting tongues of the great snakes in the lush, malign jungles at the base of the Terrestrial ladder.

"You will descend to the dark and primitive Earth," said the Master. "You will descend on a mission of social vengeance. Your treason merits death, but because you have an alert and competent brain, schooled in the arts of war, you will carry the tube animalcule to Stuton and his followers."

His lips curled in ironic malice. "If you succeed in destroying the Earth exiles, all of them, the ladder will not be withdrawn. You may return to your old patrol."

It was a judgment of mercy, and all the blood drained from Lutaton's face when he heard it. Lutaton was in some respects a primitive man. His brain harbored the taint of imagination and pity. In awful terror he recalled the legends and stories of dark Earth, which had been installed in him in the tutoring cliffics by a process of pain conditioning in his keyboard.

Lying on a metallic slab far within the Great Dome, in the midst of his fellows, he had once felt a cold flame sear him, and the voice of a mechanical tutor drone at his ear:

"This pain will make you remember. Thousands of years ago our race dwelt on the Earth's crust. The Earth was inhabitable then—warm and friendly. We built towering cities on the crust, sailed the turbulent seas in vessels of wood and steel, and warred valiantly upon one another.

"But man is not as other beasts. He seeks always to draw nearer to the stars, to fling his immense energies and limitless imagination outward toward the wheeling constellations. The inventive genius of our kind was at work even in those far-off, primitive epochs when he walked the dark Earth.

"With sublime ingenuity he forged aerial networks of lighter-than-air metals and spread them above the Earth-grounded cities. Lighter-than-air gases held in permanent suspension between the blast-distended molecules of the metallic compounds. Retalgon, Treson, Fetwinal, and Salarium enabled him to erect floating cities high above the clouds. The remains of these ancient sky cities still exist. Some day when you are older you will visit the star-haunted ruins of Astophan, where the Asian war lords dwelt in barbaric splendor—the mile-wide sky cities of Urel, Figantan, and Setar, the cloud-surmounted city of the dead above the Medrana Sea on the great northeastern continent, the sin and pleasure city of Neleth, the air gardens of Raylan.

"For thousands of years man dwelt on the Earth and in the sky, descending by space vessels to the Terrestrial crust. Then his imagination soared more boldly, and above the ancient cities a new tier arose, until the cold vault of the stratosphere glowed with the lights of a hundred teeming metropolises.

"Our aspiring race soon ceased to regard the crust of Earth as its homeland. Fewer and fewer of our ancestors descended to the surface of the Terrestrial globe, and finally, in the long night of time, it became a shunned region of contagion and horror.

"In the days of man's occupancy of the crust, malignant bacterial and protozoan diseases were extremely common. But through prolonged exposure to these scourges, he acquired a certain natural immunity which enabled him to survive. But we who have lived for

so many generations in the stratosphere, are no longer immune.

"Far beneath us, in the lush and teeming jungles and abysmal black swamps of the deserted crust, death stalks in a thousand invisible forms, awaiting our descent. We have found freedom and fulfillment high above the Earth in a glorious region of light. Let us remain steadfast in our starward climb.

"The dark Earth is evil and alien, and we must never return to it. Remember—remember this pain, all that you have been taught. Do not ever descend to the dark Earth."

THUS had Lutaton acquired the wisdom of generations by pain-indoctrination in the Great Dome in the days of his youth. He was familiar with all the technical accomplishments of his remote ancestors. He knew how they had achieved stability in the ether for their immense floating cities by the insertion of gravity compasses and stabilizers and perpetually functioning air suction tubes in their basal segments so that they remained permanently suspended over one section of the crust—even the old cities that had half crumbled.

He was acquainted with the wonders of their defense—the atom-blasting ejectors of Etonite and Sali-Setal that shot crescents of livid flame for thousands of miles through the cloud-hung ether. He was familiar with the laboratory proficiency of their peerless physicists and biologists, both in the ancient world and the immediate glorious past of his own.

Though he knew of a thousand marvels and wonders and perished glories, he had never fully understood why the Masters hated the dark crust with such a consuming hatred.

Always he had been taught that the Terrestrial crust was a wild, savage place, teeming with primitive and malignant forms of life and utterly unfit for human habitation.

But why, if it was so horrible, did the few men who descended to explore its dark hinterlands and study its alien flora and fauna, never return to the world above? Why did they refuse to ascend the ladder when it was lowered for them, and why had Stuton, the last of these, rebelled and attempted to destroy the dwellers in the stratosphere?

The work of Stuton had been magnificent in the stratosphere: horrible and anarchic on Earth. The foremost scientist in the Great Dome, he had invented and perfected techniques of destruction so potent that the Great Dome and the numerous subsidiary domes which dotted the sky for thousands of miles in all directions had nearly succeeded in subjugating all of the contiguous and hostile sky dwellers.

Searing emanations of cold spat from the tiltnots of revolving ether guns. Blasts of electro-magnetic energy hurled in devastating shafts at the curled aerial tunnels of the people of Nerlin, setting up hammering vibrations in nerves and arteries till the bodies of men became radiant fields of force and their little lives were quenched in torment.

Vegetable, animal and mineral poisons and corrosives were dropped in packets by the aerial biological patrol in which Lutaton served over the pyramid-shaped, floating air metropolises of Klutar, in the stratospheric wastes over the Sarturon desert.

These sublimely audacious conquests of alien cultures had been conceived in the imperial brain of the fearless leader-scientist, Stuton.

And now he had descended to explore the Earth—had descended and refused to return. Upward from the dark crust for many Terrestrial revolutions now, the germ-clouds had ascended, bursting over the Great Dome and sowing disease and death in the midst of chaos.

In the cold stratospheric night the germs of smallpox, leprosy, malaria, and a dozen other scarlet plagues of Earth spread amongst the dwellers in the Dome.

They spread and died, claiming only an occasional victim in tens of thousands, for the stratosphere did not favor the propagation of Earth's contagions. Down on the dark crust the Dome dwellers were not immune, but in their native stratosphere the germs made scant headway. But still, one death in five thousand was a grim menace, and if Stuton continued to bombard the stratosphere——

Kneeling in grief and apprehension before the Master of Patrol Unit G 78, [illegible] thought of Stuton and the dark Earth. Horror of the Earth drove the [illegible] from his cheeks, left a sense of consecration in the presence of the Dome made him obedient to his sentence.

"The Master was speaking again: "You know why we have sentenced you, Lutaton. You showed mercy to an enemy. When we brought captives of Nerlin here, leaf them with metallic thongs and drove them into the blast furnace, you gave one who thirsted a drink. That was a crime against all of us. Our lives are dedicated to an ideal of merciless conquest.

"We must spread our superior culture patterns over the whole stratosphere. Ruthlessly, by every instrument of destruction we possess, we must conquer the people of Nerlin, the Tremdons, the dwarfs of Terbenium, the pleasure cities of Tressau, the luminar globes of Clelean. We must bomb the Jotter's bases—find them, and bomb them. We must destroy the Stratons, the Feralchemes——"

His eyes grew exultant. "To show mercy to an enemy is a weakness! You are unworthy to serve in the Biological Patrol."

Then he gestured toward the Dome. "You have betrayed the great wonder within. In a thousand chambers within our invincible Dome, young men and women are taught the arts of war. Down ten thousand corridors the warriors march, drilling night and day.

"The Great Dome is a temple of war. There are food chambers within, and rest chambers, and chambers devoted to sport and aesthetics, but war—war is our cardinal concern. Night and day we drill, condition youth. The Great Dome is a mighty metropolis of war—an entire city given over to martial glory! And for thousands of miles about us, throughout the length and breadth of our far-flung stratospheric empire, the war ideal is served with unfaltering consecration.

"March down the aerial avenues of metal between this great war Dome, and the smaller metropolises of our race and culture. Along the way you will encounter men and women hurrying to the Great Dome on missions of conquest, and departing for the farthest dome in our colonial empire on missions of glory. But you—you have betrayed our dream!"

LUTATON bowed his with the weight of his humiliation. In the dark chamber where he had been confined, the subordinates of the Master had clothed him for a possible judgment of mercy.

He wore a space suit of green—nearly transparent uranium. About his slim middle was strapped a short-range blast rifle containing billions of liberated positrons in the charge chamber at its base. A slight pressure on the control trigger would blast the positrons onward into a field of free negative electrons.

A few inches from the mouth of the short-range weapon a searing, blinding inferno would then come into being. Trillions of electron volts of energy

would shrivel to gray ash all animal and vegetable life within range of the sinister monster.

About Lutaton's neck there dangled a conical oxygen mask. A thousand feet below the Great Dome the continuous blasts of oxygenated air jetted outward from immense supply reservoirs near the base of the Dome. It would immerse all of the adjacent aerial avenues in the inodorous, life-supporting gas of Earth and cease to sustain his lungs and heart.

Beneath all the aerial avenues of the far-flung aerial empire minor reservoirs held oxygenated air. But in the dark night of the stratosphere beneath, and in the Earth's upper atmosphere, a crust explorer without a mask would have perished in torment—would have fallen to the Earth with blood streaming from his mouth and nostrils.

The Master said: "You are well equipped, Lutaton. Go now, and do not return to us until Stuton and his followers have passed into the shadows of dark Earth. The tule animalcule or the flame rifle will destroy them utterly.

"But remember that Stuton is armed too. If you approach him as an avowed enemy, he may destroy you first. Better the tule animalcule, I think."

"You are clever, Lutaton. You have a cold, shrewd mind. Were it not for the devilish softness in your nature, the pity, the primitive sentiment, I could like you."

Lutaton rose to his full height. For an instant he stood staring into the cold eyes of the Master of Patrol Unit G 78. Then his lips set grimly, and turning, he set his foot on the topmost rung of the Terrestrial ladder.

"I serve the Dome," he said. "Though I perish in the black swamps of Earth, though the great beasts of the primal jungles rend me, I shall not complain. I serve the Dome."

Down he went then—down, down to Earth. From the cold regions of the upper stratosphere he descended. His lean, bony hands clad in mittens of flexible, cold-resisting metal with a pressure-polished, frictionless surface, he clutched the broad rungs of the ladder, his eyes staring into the wide abyss between the stars.

A beam of purple light descended from the Dome, and bathed his little body as he oscillated between the rungs, like a tiny hot spider dangling above immensities of darkness and empty space too awful to contemplate.

The light continued to play about him as he descended. Even though his thin garment was nearly resistant to cold, a chill crept into his limbs when the heated air from the Dome ceased to envelop him, and the cold night of the upper stratosphere closed in upon him.

A thousand feet below the Dome he adjusted his oxygen mask to his nearly frozen cheeks. He drew the tiniform covering completely over his head, fastening it with a metallic clip at the top of his skull. At fifteen hundred feet the light from above dimmed and vanished.

Loneliness such as he had never known came rushing in upon him then. The light had assured him that his comrades in the Biological Patrol were watching him from the Dome, and were at least aware of his peril and awful isolation. But now the light was gone, and he was appallingly alone between the upper stratosphere and the dark Earth.

The air that swirled and eddied about his space suit was nearly destitute of dust. It was a deadly vapor, laden with helium gas and free hydrogen, and no longer permeated by the warm and sustaining oxygen currents from the Dome. A man without a mask at such an altitude would have perished in an instant.

He fought hard to keep his hands on

the rungs of the ladder. For an instant a hideous vertigo seized him, and then a deliberate willful craving to hurl himself down through the freezing air to a certain death miles below. He pitted himself against this weakness—this craven wavering of his tormented faculties—and fought with all his available energy to remain loyal to the Great Dome and his comrades of the Patrol.

Success crowned his struggle. Valiantly he continued to move downward, from rung to rung, and though his fingers trembled within their flexible metallic casing, his grip never wavered until he reached the warmer and more friendly regions of the tropopause. Then he again experienced a momentary impulse to release his grip as he gazed downward into the alien abyss beneath him.

Behind long streamers of attenuated cloud, the crescent moon emerged and hung suspended in a golden haze in a violet sky. The constellations glimmered far off, and in the darkling east, above woolly masses of cumulus clouds, a tardy dawn was breaking. The Earth beneath was a variegated mass of dark greens and grays, dotted at intervals with flat expanses of water that gleamed nebulously in the moonglow.

There was nothing especially ominous in this checkerboard vista, but to the frightened Dome dweller on the ladder, visual reality was overlaid with hideous memories and traditions etched on his brain by searing pain in the far-off days of his boyhood.

This was the dark crust he had been instructed to shun, the alien Earthland of pestilence and swift death. In its immense dark jungles slothlike marsupials plucked herbage and swollen fruits from the treetops, and enormous reptiles roamed the swampy areas.

Since man's ascent to the stratosphere reptilian evolution had swung again upon an upward curving arc. Creatures resembling the gigantic saurians of the Jurassic age moved once more through the lush jungles and by the rims of the plague-infested marshes. This was the dark and awful crust, and his destiny had placed him on the ladder that led to it, and there could be no turning back.

DAWN BROKE slowly over the startling wonder of a new world as he drew reluctantly near to it. Downward and ever downward he moved, his heart pumping with inordinate vigor in his bosom. The sweat stood in tiny globules on his upper lip as the checkerboard became a level expanse of tropic wilderness, filling his frightened and harassed mind with a sense of impending doom.

He had removed his oxygen mask and when he reached the last rung of the ladder, his face was bathed in early morning sunlight. For an instant he clung to the ladder with both hands with a kind of desperate affection, as though reluctant to relinquish that last symbolical and mystic link with the Dome.

Then his face set, and his encumbered body shed its clinging inertia. Resolutely he gripped the last rung, and swung himself by his hand to the alien crust of Earth.

All about him tall trees towered. High above his head, brightly-hued birds screamed and chattered in the interlacing, sun-dappled branches. Shrewlike lemurs and large monkeys with black fur and gleaming eyes peered cautiously down at him.

In pockets in his space suit he carried many small articles of equipment. There were voltage tubes which generated high ampere currents and traced the depth, age and physical conformation of the rock strata under the Earth by measuring the resistance in voltage dimples of the planet's crust. There were photoelectric cells which registered color changes in the air and revealed

the presence of dangerous gases and microbes. He had short-wave radiation generators, air moisture-proof starchin, some breathing filter tubes, portable oxygen-sets, for stratosphere and electrophotic glasses, maps and Terrestrial charts.

But he did not draw forth a single instrument of science as he stood in the dawn in a new, hostile world. The blood was pounding in his temples, and his eyes were wide with wonder. He had been warned against a too facile exploration.

"Go slowly, explore every foot of the way, test every alien phenomenon," the Master's subordinates had warned him as they had prepared him for a judgment of mercy in the dark veil.

But wonder and fright drove caution from his mind. With eyes upraised in awe toward the swaying forest roof of dark and luxuriant vegetation above him, he stumbled forward between the trees. For how many hours he moved through the vine-festooned and sun-flecked jungle fastness before he heard the woman's wild cry, he had no way of knowing.

In criminal negligence he had not even dialed the time indicator which he wore upon the middle finger of his left hand. Only the orientation index functioned among his many articles of miscellaneous equipment. He knew that the polar needle in its gravitational coil would lead him unerringly back to the ladder if the need arose, and that assurance had made him foolhardy in respect to the other safeguards.

The woman's cry was prolonged and shrill. In sudden terror and apprehension, Lutation stood still, strained his eyes. Again it came, echoing and re-echoing through the trees.

Lutation removed the safety clip from his blast rifle, and swung it downward from his shoulder to his waist. The woman was obviously in peril, and peril on the dark crust was fraught with a more horrible menace than the perils of war in the world of the Dome.

Men and women by tens of thousands were daily blasted to shreds in the stratosphere. But in this alien world of strange animals and plague-where an unknown threat to human safety lurked behind every lengthening shadow, death might emerge in a less swift, less merciful form.

The dark crust might harbor beasts of prey more ruthless than the Dome's war lords, more disrespectful of the integrity of the human body and mind.

He did not know how near the woman was to him. The echoing corridors of the immense jungle distorted sound, making estimates of distance difficult. His heart began to thud again. He did not move forward; for the cries were coming toward him. Of that at least he was certain. And movement might put him farther from the focal point toward which the imperiled one seemed hurrying.

He could not have acted with greater foresight. Hardly had he adjusted his mind to the possibility of a grim encounter with something unspeakably hostile and malign, when a slender white form leaped from the dark shadows between two enormous boles and advanced swiftly toward him.

SHE WAS clothed in a ragged, knee-hanging garment of animal fur, and her hair was a tangled, lion-colored mass that descended in uneven strands to her waist. As she approached closer to him he perceived that her features were contorted, her pale eyes wild with fright.

She did not see him until she was nearly abreast of him. Then she swerved sharply, and a startled cry rippled over her white teeth. She swayed and would have stumbled and fallen had he not caught her.

He held her securely, swinging his oxygen mask backward over his shoul-

der so that she could rest against his breast. Her breathing was labored; her forehead damp with sweat. She looked up at him, and some of the terror ebbed from her face.

"From the Dome! You are from the Dome," she murmured incredulously.

He looked into her eyes and nodded. Her countenance held him in thrall. Such simple, breath-taking loveliness he had never thought to encounter amidst the strangeness of dark Earth.

"I am from above, yes. What has happened? Are you hurt?"

She shook her head. "I am all right," she said. "I escaped before they could harm me."

"But why did you scream just now?"

"The Trallatar," she said. "I was running between the trees and it saw me and started after me."

Lutaton felt a cold chill creep along the nape of his neck. "A Trallatar! What is that?"

She was breathing more easily now; the look of fright was gone. Before she replied she slipped from his clasp and stood beside him, shivering a little in the moist air.

"Stuton named it," she said. "It is rare on the crust and before Stuton came, the Earth explorers scarcely ever saw it. It is an enormous carnivorous reptile, a hundred feet in height, with forelegs armed with huge knives. It feels on small mammals, snatches them up, and rends them with its teeth."

Fright returned to her eyes for an instant.

"Stuton has erected an electromagnetic barrier against it. He has thrown a high frequency current about his camp, but even that is an uncertain safeguard."

Lutaton was staring at her in amazement. "Then you are of Stuton's party?"

She shivered a little, drew closer to him. "I was, yet. I am Martellon, Frobisher's daughter."

Lutaton started. "You mean you are the child Frobisher took with him, against the advice of the Masters?"

"Yes, I was that child. You see, when mother died he had only me, and he wanted to see Earth. His achievements as a physicist commended him to Stuton, and though the Masters opposed my coming, he had his way."

"But you were a very little girl. I remember that every one was shocked that so young a child should descend to the crust."

"That was fifteen years ago," said Martellon simply. "I am no longer a child."

A bird screamed shrilly in the branches far overhead. With a cry of fright she seized Lutaton's arm. "Something is coming through the forest!" she exclaimed, in terror. "Do you know the way to the ladder? If Stuton finds us he will kill us both."

"But why, child?"

"I am fleeing from Stuton and his followers. They are no longer men."

"No longer men?"

"No, no. They are beasts now. You do not know what wild Earth does to the dwellers of the Dome. Up above men obey the Masters; the wine of freedom has not corrupted their minds and hearts."

"But surely Stuton, who was great, whose mind ranged the eternities, would not raise his hand against a woman?"

"You do not know him."

Lutaton nodded grimly. "I think I do. I have been sent down here on a mission of social vengeance. I am to destroy Stuton and his followers. If I fail, the ladder will be withdrawn forever."

She stared at him in incredulous wonder. "Then you can destroy him?"

"I shall try," said Lutaton simply. "I am Lutaton, of the Biological Destroyers."

"He deserves to die," she said. There was no passion in her voice.

She spoke as one passing a righteous judgment. She seemed to have mastered her fright, as though the thing that was coming toward them through the trees had become suddenly less important to her than Lutaton's mission.

"He is drunk with power and freedom," she said. "First the height, now wonders of Earth awoke a great fire in his breast. In a burst of just hatred he waged war upon the Dione, sending up deadly germs to destroy the killers, the Masters who drive men to destruction——"

Lutaton turned pale. Was this girl quite mad?

"The killers!" he exclaimed. "You mean, you think we are all killers up there, all deserving of death?"

"Yes," said the girl, quite simply. "All your lives are dedicated to destruction."

With a shudder he drew away from her.

"You will change," she said. "Wild Earth will change you. Even here, in this strange, bright jungle, with the warm, sweet odors of wild Earth in your nostrils, you are changing. This is freedom, Lutaton."

"It is the freedom of betrayal and death," said Lutaton.

"Smell the plants of Earth, Lutaton. Listen to the bird songs. See how the sunlight etches patterns of glory on the leaves."

BEFORE he could speak again she was in his arms. Her cheeks merged with his in the familiar Dione caress of friendship, confidence and affection. Then she drew her face a little apart, and looked deeply into his startled eyes. Lutaton's eyes were not as the eyes of the Dione dwellers now. A strange look had crept into them.

"Freedom is not for all men, Lutaton," she said. "Freedom is a golden fruit, but when it is held too tenaciously, it shrivels and blackens——"

"You mean——"

"When my father died, Stuton and his companions contended for me as though I were but a pawn in a game of chance. Luckily I escaped before they could dispose of me as they had planned."

A sudden fury flamed in Lutaton's eyes. His fingers tightened on the handle of his blast rifle.

"I shall blow them to shreds."

"I could wish that the ladder were still lowered," said Marteiben. "I hate the Dione, but I would gladly return there with you. Stuton has devised unspeakable torments. If we should fall into his hands——"

The words froze on her lips. Before them the great trees moved. There ensued a splintering crash and the Earth beneath them shook and quivered as though lightning had struck with violence from the vault of heaven. Lutaton's heart leaped in his chest. With a cry of warning he seized the girl's wrist, and pulled her frantically backward.

Beneath and above the ragged, unpatterned ceiling of massed vegetation, a great shape towered. Its writhing columnar neck was extended in horizontal menace, and its black, reptilian body swayed slowly from side to side as the two terrified humans gazed wildly up at it.

It had pulled up two trees by their massive, twisted roots, and was holding them tightly clasped to its bosom. The little shriveled limbs that had torn the trees from their deep earth bed were so foreshortened they seemed mere stunted appendages dangling against the thing's breast.

Its yard-wide stumpy hindlegs were planted firmly on the earth, and its great tail thrashed backward and forward, slowly, with a hideous, flailing motion in the curtailed area of shattered and trampled vegetation behind it.

Lutaton was conscious of slim hands

clutching frantically at him, of eyes bright with terror burning into his in mute, desperate appeal. As the monstrous saurian swayed sluggishly between the trees, an acrid, unendurable odor surged downward from its glistening dark flanks. Its small eyes gleamed coldly, unblinkingly, in puffy folds of swollen flesh. Its great jaws were open, revealing a long row of sharp, jagged teeth.

For a space of time that seemed infinite but was in reality brief, Lutaton remained staring upward while terror went stabbing through his brain in white-hot shafts. Then he responded to the awful peril with a grim competence. Seizing the handle of his blast rifle he swung it swiftly about, and focused it at the Trallatar's gleaming breast.

There ensued a blinding flash followed by a swiftly spreading swirl of fire. A long green tongue of flame ran rapidly up and down a few feet from Lutaton's terse body.

The great reptile did not recoil. As the subatomic barrage shriveled and blackened a wide circle of vegetation immediately beneath it, it merely extended its long neck toward the two tiny human forms.

Lutaton's blast-gun spoke again. The woman behind him clutched his arm, drew herself to him so that death might claim them together. The saurian was moving now. It had lifted its ponderous hindlegs, and was advancing.

Lutaton knew then that the blast rifle was useless. Its range was so short that the beast would be nearly upon them before the deadly barrage could reach it. The forest before them was seared as though by fire, but the tower of massive reptilian flesh bore no taint from the blasting.

SWIFTLY Lutaton's hand went into his space suit, and emerged with the packet of the tube animalcule. His hand shook a little as he hurled it straight at the advancing horror. The packet smashed against the great form's leathery breast, and burst. Down its black skin the moist culture ran in tiny rivulets that covered an ever-widening area as they spread fanwise toward its massive belly.

But its advance was not stayed. High in the air above them it towered, like some legendary giant in battle, and for an instant Lutaton and his companion remained without hope, clinging to one another in an agony of despair.

Then on the gleaming dark breast a wedge-shaped banner of flowing crimson swiftly unfurled. The great head lifted in sudden agony. The maiming which ensued was grim and horrible.

As the deadly, corrosive animalcule etched trails of torment in the dark breast and heaving flanks of the wildly-rearing saurian, it became oblivious to everything but its own anguish. Its cyclopean body heaved, and a hiss more deafening than a belch of steam from the enormous blast furnaces in the world of the Dome, echoed amidst the trees.

Mad with pain and fright it turned, and went crashing through the forest in a blind course that strewed havoc indiscriminately.

The girl was moaning hysterically. Lutaton's face was white; his eyes deep pools of frozen terror. But after an instant he drew himself up and the color swept back into his cheeks. He tapped his breast.

"I have one more packet," he said. "For Stuton and his comrades."

The woman stopped moaning abruptly. She had beheld a strange thing. A man from the Dome was weeping, and his eyes showed unmistakably that he was weeping because of his immense relief that she was safe—that the Trallatar had not harmed her.

"I will lead you to Stuton's camp," she said. "If we travel by a, we can slip

beneath the deadly electro-magnetic circuit.

Together they moved through the forest, Martelbon leading the way, and together they stumbled into Stuton's camp. But the electro-magnetic circuit was no longer functioning, and Stuton did not come forward to greet them even with hostility. Trampled hideously in the soft earth he lay, with a broken back, his eyes staring blankly Domeward.

His comrades lay scattered and similarly silent and sightless between the Trallatar's indiscriminately scattered spoor. The crushed head of one lay in the center of a circular, yard-wide footmark which was slowly filling with muddy silt from the moist areas beneath the soil.

Another was lying with shattered limbs a short distance away. The brain contents of still another were spilling darkly at the base of a gleaming metallic bombarding tube. The great, skyward-pointing tubes which had hurled the germs of dark Earth into the stratosphere were standing silent and motionless now beneath the far, glittering stars.

Lutaton took Martelbon's arm and led her silently into a cool green forest glade a short distance away.

"The Trallatar was maddened with pain and fright," he said. "He must have broken through the circuit and trampled Stuton and his followers in a blind frenzy."

Martelbon nodded grimly. "It was a judgment of wild Earth," she said.

She was staring at him intently, with a curious, uncertain expression in her dark eyes.

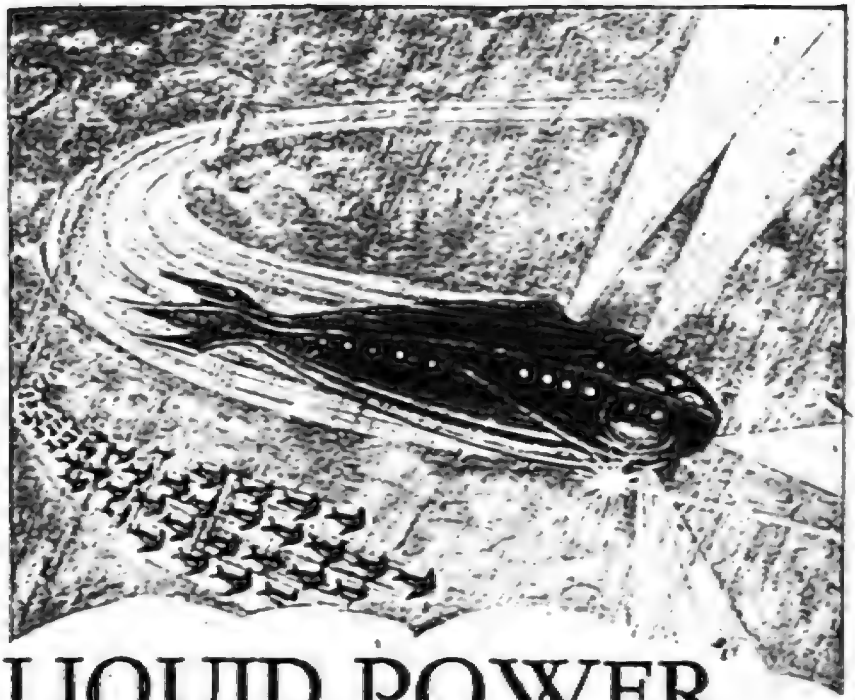
"You are too like Stuton," she said. "Wild Earth will not betray you into savagery and folly. You see, Lutaton, freedom is a heady wine, and one can so easily become drunk on it. The Dome is wise to curtail it; to teach men the immense advantages of order, planning and co-operation. But the Dome dwellers co-operated for a cruel and gruesome purpose. They forgot the lessons of wild Earth."

Lutaton was staring at her in growing wonder. Within her dark, untamed and unfathomable eyes, he discerned vaguely a new world foreshadowed.

"To taste of wild Earth," she murmured, "and not be swayed by it, as Stuton was, to keep one's head and bring a new vision back to the Dome, a vision of peace and co-operation, tempered by the ancient freedoms of Earth—that is to be a god, Lutaton."

She laid her head on his breast as she spoke, and as Lutaton gazed downward at the tangled masses of her dark hair, he knew in his inmost being that he was already more than a little like a god.





LIQUID POWER

Presenting a thought-variant conception of the character of electrical composition

by Warner Van Lorne

D



Don pulled the lever back and the blockade was gone! The way ahead was clear.

which drove the ship, the uranium hull, had proved immune to erosion or deterioration in fifteen years! He had contrived to paint the hull a forest-green so it would not be noticed by passing planes.

Piece by piece Don had been over every bit of metal that comprised the ship, its hull, its rudders, its wires, controls, and machinery. He knew the principle behind which drove it by a motor which had not been redecorated after fifteen years—and Don was waiting patiently, working hopefully, for the day five years from which would bring him control of his own ample fortune.

Some instinct kept him from placing too much trust in "Jet-on." Perhaps it was one of the "gut-feelings" Don called him on the only time intimate friends he had made in his recent isolated years.

But now, unwanted, was loosed over the whole world! Don knew his father's ship would spell safety to anybody for a peace-loving people, and he wanted to complete the work which had proved so

promising in laboratory experiences.

The chief lack in the great invention of Morrow, senior, had been the inability of his wonder ship to create energy fast enough to drive it for more than one thousand miles of continuous flight. Then the necessity for battery changes and adjustments would keep it grounded for a week before flight could be resumed.

Don Morrow, by diligent experiment, had found a new principle in battery construction, which not only lightened the weight necessary but also multiplied the power carried by a fraction more than ten times. This principle, tacked onto the already superefficient electric-blast propulsion of aircraft in 1949, would give any nation an overwhelming military advantage, for it enabled the plane which carried it to double its load of explosives, to mount one-pound rifles, and to remain in the air at top speed for five hundred flying hours without refueling!

But, money being what it is, Don called his "pocketbook" to the laboratory at last and showed him the working model of the plane driven by the new battery. The little ship had been blasting its force for seven hours when Ferrick saw it. And it was good for as many more.

Don saw his guardian's eyes narrow and the pupils contract into feline watchfulness. He had been about to speak of something else—but he bit his tongue and waited.

"I think you have got something here, young fellow, and I want you to let me handle it. Don't tell a soul until we get it protected. You haven't told any one, have you?" Ferrick's eyes looked beadily at Don.

"N-no, I haven't told any one, yet —" Don was about to say he was going to tell Mr. Hartshorn, but he stopped in time. Silence seemed the best protection he could have on some things, if his sudden feeling of distrust had any foundation.

"Well, don't! I'll take the model and handle the legal end of the matter quietly. I think you have what your father failed to perfect when he died, but time will tell."

Something of the callous coldness in that last remark irore Don up tighter than ever before. Two years' work! But of course everything would be all right. Ferrick would get the patents.

Don turned back to his workbench with only one glad note in his train of thought. He had touched an idea so unbelievably great that if it worked—nothing else mattered. Something had clicked in his brain as he talked with Ferrick. It connected with earlier thoughts and observations he had made during the past two years. Only this morning it had caused near catastrophe.

ON A metal bar, two inches below a new type of high-tension coil, a tiny globule of liquid had suddenly appeared. That in itself was strange, but this liquid seemed to be alive, with every color of the spectrum moving through it. And Don watched. Slowly a ring of the metal about the globule had turned red, then white, and then had melted and dripped slowly to the floor!

He had said nothing to his "pocketbook" about this—but if his eyes were not playing him tricks it meant he was close to accomplishing the unspoken dream which had been growing in his brain as a future certainty. Until he could discover, borne, and demonstrate it, the world would call the idea the vision of an insane mind. But Don had believed and felt he was about to find and bottle liquid electricity!

The conception was so contrary to the trend of thought that he must complete the accomplishment before he mentioned it. And then he must guard the secret with his life. The available power would be so great as to stagger the imagina-

tion, and, once it was under control, its destructive qualities would put into the hands of its inventor the power to raze cities, or to burn stone.

A month went by. Don was sleeping in his laboratory half the time. His eyes held a strange glitter of intensity. He walked, ate and slept with his coils and generators. But slowly, drop by drop, he had added to the tiny store of the new liquid in a special container. The container was glass-lined, the glass surrounded by a thin coating of uranium, his father's alloy. Next came a vacuum, then another layer of glass, then rubber, then cork, and finally an outer casing of uranium one sixteenth of an inch thick. Don was taking no chances.

Another month passed. The container was full. With a tiny glass needle Don had tested the strength of his new find after two months of storage. The result, on a piece of tempered steel, had been the same. It had retained its strength! He tried it on aluminum with the same result; on uranium, and it, too, melted. He tried a globule in the storage battery in his car, and the power was many times what the battery could carry; it burned out every plate. Only by building a superbattery was he able to use it, and the result was a full charge for three superbatteries—and instantaneous!

Another week of sleepless work and Don had tested the liquid in a tiny electrical unit which was geared up to power tests. The result would have equaled three hundred horse power in automobile traction! By the time the battery showed signs of exhaustion a car would have covered seven hundred miles.

Then Don went to work, operating on his car. He removed the motor and substituted the tiny electrical unit. For safety's sake he installed a duplicate unit—and three of his special batteries. This consumed another week, but during that time he had learned that glass containers were safe for the liquid, so he filled several tiny rubber-cased glass bottles, one of which he put in a pocket of his car.

Then, at last, he was ready. Eyes shining, he slid into the driver's seat, threw the car in gear, and pulled the electrical control lever the tiniest fraction of an inch.

The little roadster jerked. It was moving! After the first jerk it settled to a velvet smoothness; there was no vibration, no sound except the suction of the tires on the road. Don forgot himself for a moment, and when his eyes glanced at the speedometer it registered sixty-five! He whistled and slowed down. His heart was pounding. He had built up a speed of sixty-five miles per hour and he hadn't opened the power to more than a tenth of its potential!

Don was smiling as he brought his car to a stop before the home of his two most intimate friends. He leaped out and fairly flew up the steps. At the door he fidgeted until it opened.

"Why, Don Morrow, you ought to be ashamed of yourself. I haven't seen you in ten weeks!" The door swung back, and a pretty, dark-haired girl held out her hand. "How are you?" she asked.

"Is your dad home?" Don was too excited to notice the glance of disappointment in her eyes.

She shook her head.

"Well, come on, Dotty. It's you I want, anyway. I've got something to show you."

"Why——" Dorothy Hartshorn almost gasped, but she only stepped to get her handbag and then came out obediently. Don took her arm and piloted her to the roadster.

"Climb in," he said, and ignored the question in her eyes. "we're going places."

"But, Don, I——"

"Shsh! Let me talk for a while." Don was excited beyond the point of reason. The little roadster jerked, then

rolled smoothly away. It gathered speed so quickly that Dorothy gasped.

"How do you like it, Dot? This is what I've been working on. The motor's gone. It's running on liquid electricity, and I'm not telling my 'pocketbook' for the present. I want to explain it to you and your dad, though, just in case."

"It's—great—Don, but—where are you taking me?" Dorothy was clinging to the seat with both hands. They were nearing the open road. "Don, slow down," she called, suddenly frightened. "You're doing eighty-five!"

"Yes, Dotty, and I haven't even opened her up! We're going to the lab. There's stuff there I want you to see."

Two hours later the little car was rolling back toward town. Dorothy's eyes were shining with the same intense light Don's held. She had seen it all, and because she had worked with Don many, many times in the last five years, she understood. The ten weeks of silence had been forgotten in the overwhelming revelation.

II.

THERE WAS a light in Anthony Fervick's study. Don headed down the hall toward it, intending to inquire about the battery patent. There should have been some news before now. The application should have been registered and papers received. In fact, it should already have been placed before the government authorities.

Voices halted Don in his tracks. A strange voice, and then Fervick's.

"It is good that this has fallen into your hands," the strange voice said in a heavy Iass accent. "It will assure success to our cause. You have proved yourself a true son of your country."

And then Fervick: "I am only too glad, sir, to prove of service after my failure fourteen years ago. It is compensation to know that I now offer the infallible power to attack and regain what was rightly ours. My long years spent in this land are not in vain."

Don moved swiftly behind the velvet portieres of a doorway as he heard chairs scrape and footsteps shuffle about the study. Through the crack he was able to see little, but he felt certain the visitors were foreigners, of the country of Fervick's birth.

As soon as the hall was clear, Don tiptoed to a window, dragged to the lawn, and fairly ran to his roadster. The little car must never be brought home again! Now he was headed for Harrsborn's.

For three hours thereafter, Don, Mr. Harrsborn, and Dorothy sat with their heads together while Don instilled into their memories the salient facts of his battery invention.

"Fervick will know that I could do it again! I'll be careful, but if anything should happen I want you to go to Washington immediately and give them the facts. Meantime, and until then, I'm going ahead with my liquid. It is only a matter of weeks when their invention won't be worth the traditional powder."

Then, as Don went toward the door, he asked over his shoulder, "Will it be all right if I leave my roadster here for a day or so? I think it would be safer than at the lab—and for the moment I certainly don't want to take it home."

"Certainly, if you wish, Don," Mr. Harrsborn replied, "but how are you going home now?"

"Taxi," Don said, blowing a kiss to Dorothy, who blushed furiously, while her father laughed.

Breakfast with his "pocketbook" was anything but a pleasant meal for Don. He caught his guardian gazing at him time after time as if troubled, but he went on eating and pretending not to notice.

"Why did you go out again after you returned home last night, Don?" Fervick asked at last.

"Why—I—— Oh, I remembered that I had left the lab unlocked and went back." It didn't sound very convincing, and certainly Fervick didn't believe it. Don bolted his food quickly and grabbed his hat.

"I'll be at the lab all day to-day, sir," he said, almost choking over the last word. "Got a new idea on the battery. By the way, how is the patent coming?"

It was Fervick's turn to look uncomfortable. He turned his beady eyes on Don and searched hard for some telltale expression.

"It will come through all right, I think, son. Those things take time. Perhaps three months more and we will have it all cleared up and be ready to move."

Don grunted and raced out the door. He wanted to get as much space between himself and his double crossing, traitorous guardian as he possibly could. He wanted time to think things out. He wanted to perfect the use and control of his power juice. So he headed for his laboratory and buried himself in work.

Dorothy drove out about five in the afternoon and stayed a while. She was waiting at the curb to drive Don home when a police ambulance drove up. Something made her sit still and say nothing, but she kept her eyes open.

A policeman entered the laboratory and tapped Don's shoulder.

"Are you Donald Morrow?"

"Yes, sir." Don laughed. "What have I done?"

The officer shrugged. "Search me. I was simply told to bring you aboard-town, and that means you have to go."

"O. K. Let me wash up first." Don's mind was racing.

Fervick was back of this, whatever it was. He hoped Betty would keep her mouth shut and her eyes open, hoped she would follow and report to her dad. He didn't know why, but he had a feeling he'd need his friends more later than he did now.

And he was right.

A month later Don still paced the floor of an isolation cell in an insane asylum. He had been allowed no visitors. He was not allowed to write or even have paper in his cell. Mr. Hartshorn had talked with him once, and it had cost nearly a thousand dollars in bribes to arrange that. Fervick had inherited power and the faith of the authorities from Morrow, senior.

Everything now depended on Dorothy. Mr. Hartshorn had failed to effect a release and had failed even to bribe his way into the sanitarium a second time. But if he had passed his instructions on—and if only, with well-greased palms, the keepers would do a small favor——

On the tenth day after Mr. Hartshorn's visit, Don's keeper surreptitiously passed him a small box of chocolate drops. Candy!

Meantime the war-clouds were gathering over the world with sinister power and deadly threat. One nation which had always been exceedingly polite had become truculent, insolent! And Don Morrow, who alone held the antidote for that insolence, was held incommunicado in a padded cell, isolated as hopelessly insane. And it was his invention that gave the enemy nation the feeling of confidence which was leading it toward war, and his own people toward catastrophe!

III

THREE chocolate drops rested on the stone ledge of Don Morrow's airplane cell. As he paced the floor now, beads of perspiration stood out on his forehead. If instructions had been followed they contained a neutralizer which would become ineffective at three o'clock in the morning. They contained more energy than he had ever dared release at one time. What the effect would be he could not be sure, but that it would

mean fire and destruction he could not doubt.

At 3:15 they still remained on the window sill. Three tiny pieces of candy. But at 3:20 a spot of moisture spread out from one of them. Then from another. Then from the third. Don's heart stood still.

There came a faint, luminescent glow on the sill, then the liquid ran free. The stone sill seemed to melt with intense heat, and to drop away. Don leaped for the back of the room and pulled the mattress up before him as a mass of fire blinded him.

An electric shock shook him. The heat lessened as quickly as it rose, for the entire wall seemed to melt down before him and leave a fused opening that grew bigger and bigger in a matter of seconds.

Don dropped the mattress and picked his way toward the blinding white heat of melting stone. He leaped through the opening with the cries of terrified inmates ringing in his ears.

His room had been on the second floor, so the fall was not too great. He made the leap, picked himself up and fled from the inferno. By the time he reached the stone wall about the grounds the section of the building where his room had been was one great hole rimmed by white-hot stone and fusing metal. He had leaped none too soon.

His roadster stood at the curb when he scaled the wall. He raced for it without looking back even once. The door opened to his touch and he jumped in, crashing against a silent occupant.

"Don, my toes! Have pity," Dorothy cried aloud.

"Sorry, Dot—— I expect you."

"Get going, Don. Quick!"

The car shot from the curb and up the street like a shot out of a gun. In five minutes it was through the city and on the outskirts of the other side. Don gulped a couple of times before she got the courage to speak.

"Where are we headed, Don?"

"You're headed for home; you should have left the car and been home hours ago. I'm going up North." Don dared not turn his head to look at her.

"Oh, no, I'm not, Don. I'm in this with you, and I'm going, too. I left a note for dad. You can't be seen, and, I can."

Don digested that thought carefully. It was true. He owned only the suit he wore, and that was the uniform furnished to inmates of the asylum. They were on the concrete highway of the open country now, and racing like the wind.

"But, Dot, you can't go off with me alone," he protested weakly.

"Why not?" she demanded. Little spots of color not caused by the wind flushed her cheeks. "I intend to marry you eventually."

"Well, I'll be—— Say! You've got to go back. My juice—I'll need it."

"You sure try hard to get rid of me, don't you? I put all you have in the rumble seat of this ice wagon. Anything else?"

"Yes. The license plates; they'll recognize these."

"Really?" Dot's voice was sarcastic. "Your lab is a pile of ashes, and in the ashes they'll find the remains of my roadster with your license plates! How stupid do you think I am?"

Don's attention was taken up with driving at a ninety-mile clip. He seemed to forget everything else, but he stole a glance at Dorothy. Her lip was trembling. She was on the verge of tears. He felt helpless. He wanted to comfort her but all he could think of to say was: "Dot, you're wonderful. You thought of everything."

And then, like sunshine breaking through the clouds, she smiled.

"Do you suppose," he babbled, suddenly tender, "that you could curl up and get a little sleep?

HOUR AFTER HOUR the little car slid through the night. It crawled through the towns and villages, and raced through the open stretches.

At seven o'clock Dorothy sat up suddenly and said: "Don! The man you have watching the ship! Can you trust him?"

Don said: "Dotty, listen! Not even you knew that I gave your father the money and that I own, in his name, the ground where the ship lies. And not even your father knows that the man who watches the ship is the mechanic whose blunder was supposed to have caused my father's death. He worshiped my father. He did not cause his death. That was Fervick's story. Some day soon we'll learn the truth.

"Don't worry about him. He taught me most of what I know about the ship. And he'll be loyal as long as breath stays in his body."

"Then we'll make out all right," Dot said, and slid her hand under his arm.

"Except that I'm broke," Don grumbled.

"Not quite, Don. I forgot to tell you that father sent five thousand dollars in small bills—ones, fives and tens—just so you wouldn't be! It's in the pocket of the car. He figured you'd find it."

Don leaned back in the seat for the first time in hours. A lump rose in his throat and he gulped hard.

"I never dreamed there would be two such friends, Dotty. You and your dad have——"

"Tut, tut, big boy," Dotty stopped him. "Daddy says you are insurance against war, and he's willing to risk paying the premium."

Don laughed. His heart was bounding like a galloping horse. He'd win out now. He had to win out! A matter of weeks and the country would be threatened with destruction through his own stolen invention. Well, he'd show them. He'd make them wish they'd never got their hands on it, if only they'd wait—wait just a few weeks. That was all he needed. Time!

"But the old skinflint is charging you interest on his money," Dorothy burst out suddenly. "He——"

Don burst out laughing, and kept on laughing so hard he had to slow the car almost to a stop.

"Thank you, Dorothy," he said at last. "Then at least I know I've got one good friend. You wouldn't have charged me interest, would you?"

"Well," she said grudgingly, "I suppose it was nice of him to send it, even so."

The last two miles of the trip were over a road which was not even a good footpath. It was wide enough for the car, but otherwise they pretty much broke trail. The isolation was complete. For four miles back they had not even passed a mountain shack.

And then, suddenly, they saw one, a two-room affair at the left of the road. An old man was coming out the door, shotgun in hand to inform them they were on private property and that there was no room in that section for strangers!

IV.

A MONTH LATER, Don Morrow still worked feverishly with Jack Stacy, his mechanic, checking the last details of their grueling job. Two men had overhauled the vast one-hundred-and-fifty-foot ship from rivets to elevator controls. They had tested every bit of metal in the machines for weakness, which was not there.

Dorothy had long since returned to the city, and was expected to return North in another day or two with some chemicals and the inside news as to the danger of immediate attack.

One bulky piece of machinery remained to be gone over—a mysterious mass of coils and converters which ap-

peared too complicated to operate lightly or without careful study. It had no part in the operation of the ship. That was clear, for its only connections were made to a round reflectorlike piece of metal which somewhat resembled a cross between a searchlight and a huge nozzle. It was not a gun, but might possibly be an intensely powerful light. Don had a strange feeling that it resembled the machine with which he had produced his liquid electricity.

He had left this job until last, partly because he was a little afraid of it. Now he was ready. Piecethy piece he and Jack unfastened the protecting plates so they could study the machinery.

"Did you help get this together, Jack?" he asked.

"No, Donald; this is the only thing I didn't help to assemble. No hands ever touched it except your father's. He installed it himself. I never even knew what it was. And I don't think," he added slowly, "that Fervick knew either."

Don was laying the plates in orderly rows, to be reassembled easily, when he noticed something on the inside of one of them. He leaned forward and studied it a moment. His voice caught with tense excitement when he spoke:

"Jack, look here. Listen——" Slowly he pieced out the words that were scratched on the inside of the uranium plate:

> "Just made startling discovery about my partner. He plans to kill me for this invention, but he thinks the ruse I had made for he became hunting contains the secret instead of the harmless-appearing machine. The machine is right, but have just discovered there is not enough power to operate it. And has a gun trained on my back now, as I am securing this plate in place. This making proves to be my death warrant."

The two men gazed at each other speechlessly. Fervick's financial interest in Morton's affairs had been small, but as Don's guardian he had controlled them all!

"Murder!" Jack said, tonelessly. "Then they rolled the ship over onto him!"

"Yes, Jack," Don said, "but now we have to stop Fervick—and this is a rocket. We must learn its secret."

With the plates clear Don tested the levers and watched their connections. His father had lacked the power but he had that! Suddenly, at the pressure on one lever, a trap opened in the floor and the nozzle lowered into it automatically.

This machine was set almost in the nose of the ship. With a thumping heart Don lowered himself through the trap, and found that from that compartment the hull ahead was not obstructed. The nozzle fitted forward into the outer shell of the hull. Beside it a telescope part of some transparent substance—not glass—enabled the operator, from his seat, to see eye to eye with the direction of the nozzle.

The little compartment in which he was seated was entirely contained between the outer and inner plates of the hull. It was evident that only his father had known its purpose!

"Dad lacked power, Jack, and that's the thing I've got." Don clambered out of the little turret and bent over the machine. "We've got our leg job ahead now. I could charge these batteries a hundred times, but if I can devise a filter that will regulate the release of power to the amount needed, we are ready to travel—with the fastest ship the world has ever known."

THERE FOLLOWED days in which filters melted, others exploded, and still others refused passage to the magic liquid power! They were days of discouragement. Dorothy had been expected back with materials, but she hadn't come. Don's supply of money melted away under the expensive demands for experimental work.



Don leaped for the back of the room and pulled the mattress up before him. An electric shock shook him. The entire wall melted away——

Which he had replaced at the burned-out timers for the sixth time, he suddenly turned to Jack. "Don't try them. I've got an idea that may work."

He fell to building batteries like the ones used in his car. They had to be built on such a scale that Don saw the last of his supply go before they were complete.

"If we don't fly it now," Don said through gritted teeth, "I might as well go back to the asylum!".

"But it will fly, Donald." Jack's calm confidence was amazing. He had watched the liquid boiling into the water

of the huge batteries, and he knew.

The batteries were built and installed. They were charged on the same basis he had found successful in his roadster. Jack had gone to the rear of the ship for some tool.

"I'm going to try this rocket thing first," Don said slowly. "Not enough power. Bah! I only hope that our excess power doesn't explode it!"

"Is it so bad that you're talking to yourself?" A voice spoke over his shoulder and Don jumped like a startled hare.

"Dotty! You're just in time. I'm ready to test."

"Dad's here," Dorothy informed him, "and you are officially dead. Killed in the mysterious fire. Ferrick believes it and that makes you lucky, although it gives him temporary control of your money."

"Hello, Don." Mr. Hartshorn clambered into the ship as he spoke, but Don just sat back on his heels and looked at Dorothy, unable to believe he was not being sought like a hunted thing.

"Oh—uh—hello, Mr. Hartshorn," he said at last. "I—you—Dotty just told me I was dead and I couldn't believe it!"

"Yes! Yes, you are, officially, but it seems to me you are doing well for a ghost. The old ship looks remarkably airworthy after fifteen years."

"She is, sir. She's been sealed and the machinery is perfect. It's been kept oiled, you know. And the hull is of Dale's own alloy—uranium. It is incorruptible."

"You think she'll fly?" Mr. Hartshorn was looking closely at the rivets and plates, gazing at the well-oiled machinery. "And if it does fly then what?"

Don looked up in amazement. "If it does fly," he said, sharply, "I'll give the government air service with a forty-eight hours that will overwhelm any foreign power that dares attack. The battery they stole isn't an amateur beginning to what I have here!"

"Sure?" Hartshorn looked worried.

"Positive. Now if you and Dot will go back and wait at the cabin for ten minutes we may know something. Please. This is too new to risk your lives on."

Dorothy started to protest but her father took her arm and ushered her out without another word. Don waited until they were safely at the cabin.

"Jack, stand by. If anything goes wrong, throw that switch, regardless. I'm going to try the rocket and see what it's all about."

With infinite caution Don pulled the release lever slowly. For a moment nothing happened, then the coils began to turn red and he eased it back and shook his head.

"A dud," he said softly. "We'll have to try something else."

But a sudden commotion and voices outside the ship made him stop.

"Don! Don! What have you done? What are you doing?" Hartshorn's voice boomed above Dorothy's as they came panting to the door. "Stop it! Stop it!"

Don and Jack looked at each other perplexedly. "Stop what?" Jack asked. "We were only trying the levers."

"Didn't you look?" Don asked excitedly.

Don shook his head. "We were watching the reaction on the machine."

Something of their infectious excitement came to him and he hurried himself quickly into the little compartment and stared forward through the lens.

"My Lord!" he exclaimed. "Jack—it—it——" He could get no further.

There was a hole a thousand feet in diameter bored into the mountain before them. Whatever had come within that circle was gone. Trees stood without their tops. The tops had—vanished; they had been consumed! They were

gone. The rock and earth which had occupied the space in the mountain was gone, vanished as if they had never been, and a clear-cut tunnel extended into the mountain as far as the eye could penetrate.

Don turned at last to Mr. Hartshorn.

"What did you ask me a few minutes ago: 'And if she does fly, then what?'—or did I imagine it?"

Mr. Hartshorn's face was grave. It was working as though under the strain of intense emotion.

"I still hate to have you risk it, Don," he said softly. "But I'm willing to have you try. We'll wait at the cabin—and don't fail."

Don looked at him a moment, not understanding.

"Is anything wrong?" he asked, noting the glance between father and daughter.

"Not—yet, Don. But I'd like to wait and be sure you are all right on the test, if you don't mind."

Arm in arm, without once looking back, the Hartshorns went back toward the cabin. And ten minutes later the great ship rose like a bird and sailed slowly. Suddenly the ship sped toward the mountain at terrific speed. Dorothy jumped to her feet and clapped a hand over her mouth, while her father wiped his brow, but they didn't look away.

Inside the cabin, at the controls, perspiration burst out on Don's forehead as he veered the ship right and up, missing the rocky mountainside by a matter of feet. He circled once and eased it down slowly through the treetops to its clearing. It landed with a slight jar, stopped, and he sank back in the control seat weakly.

"Jack," he said, dreamily, "I opened the direct power when we were clear of the ground, and shot it right down again. That was my idea. The filters stand the strain when there is no direct ground through the ship. We'll be able to make a thousand miles an hour without strain—and uranium, according to dad's figures, will not heat up under that friction."

Jack nodded solemnly. "That's right," he said. "We tested it up to sixteen hundred miles in the laboratories in ten-hour stretches."

They still sat side by side in the control room when the Hartshorns returned.

Dorothy was starry-eyed. She flew to Don and kissed his cheek, then turned away. It seemed almost as if he had returned from the clutch of death!

Her father was pale as he placed his hand on Don's shoulder.

"Don," he said, "it's time for you to know. Yesterday morning the Atlantic air fleet massed to meet an enemy attack and was two thirds destroyed in the ensuing battle. We lost three planes to the enemy's one. The Pacific fleet is speeding cross-country to join the remnants of our Eastern defense. The battle will be joined late this afternoon or to-night. I don't know what we can do, but——"

Don paled at the older man's words. His shoulders slumped. He was too late. Or—was he? His eyes gazed at that hole in the mountain, unseeing for a time. Then suddenly they focused and his finger pointed.

"Unless I'm wrong, Mr. Hartshorn, we can destroy their fleet. And so far, we haven't been wrong."

V.

UNDER COVER of darkness Don's wonder ship pointed her nose toward Washington, D. C. There was no throbbing hum from her motors, no sound to indicate her presence in the air. She carried no riding lights for Don knew that where the enemy flew they must make their presence known to each other, and that he could see their lights.

Dorothy had driven to town to send a wire in her father's name, addressed

to his schoolday friend, the secretary of war. He asked him to be in his office until he heard by phone from her father.

She had left the field three hours ahead of the ship. The wire would reach Washington two hours ahead of Don and his two companions. They needed an hour to make the trip.

Time and again the great ship nosed in a quick circle while they risked discovery identifying a town to keep their bearings, but her great speed was their greatest safeguard—that and her silence.

At nine o'clock that night they took off on what might prove the most epochmaking flight in all written history. At ten o'clock they nosed her down on the darkened army air field outside Washington, to be immediately encircled by unsheathed sabers held by overwrought guards.

But so silent had been her descent that not until her hull loomed up on the field had she been seen, and fortunately, not a shot was fired!

They permitted a guard to go aboard and moved under heavy convoy to the headquarters room.

"Quick as you can! Get me a connection by phone with the secretary of war," Mr. Hartsborn told the commanding captain. "He expects us. It is vitally important. You can ask us all the questions afterward."

"We have had no instructions——"

"Don't you realize that secrecy may save us after what happened to the Eastern fleet? Get that call through quick."

"But——"

"Let the secretary decide." Hartsborn was getting angry.

"We have orders——"

"He is waiting in his office for this call." The older man knew that if he failed now they would be locked up and the chance of saving the Western fleet would be gone. Something in his eyes seemed to click. The captain turned to the phone and got the call through. Then he turned back to Mr. Hartsborn.

"Heaven help you if this is a trick," he said slowly.

But the call went through. The secretary was waiting and the captain handed the phone to his prisoner.

"David Hartsborn speaking. We are at the military landing field with a ship which can win the battle. Yes. New weapons. Donald Morrow's son. Yes, he's here and in charge. We will need your six most capable and trustworthy aviators as a crew. We take off as soon as you can get here and we can instruct the men. Yes, we'll wait."

Those in the room heard only one end of the conversation, but Hartsborn was smiling as he put the phone back on the table. The captain motioned him to a chair with a new respect.

"I hope you will understand, sir, that military precautions——"

"You did just right," Mr. Hartsborn cut the officer short. "But please give strict orders for your men to keep hands off the machinery in the ship and for not so much as a match to be lighted on the field until the secretary arrives."

The captain issued brisk orders and an orderly departed on the run. Don sank slowly down into a chair. The strain had been terrific, and now that everything seemed to be coming out without further difficulty he felt exhausted.

The roar of motors brought them to their feet a scant twenty minutes later as a cavalcade of big cars stopped before the door of headquarters building. A distinguished-looking, gray-haired man ran through the door, hand outstretched.

"David Hartsborn," he said quietly, yet with the worry lines deepest in his forehead, "what does it mean? Tell me quickly."

"It means, Carl," Hartsborn told him, "that Donald Morrow's son can still save the fleet and the nation if you'll

give him command of his own ship and turn him loose."

The two older men's heads drew close together in whispered conversation for five minutes. A slight smile came to the secretary's worn face as he rose.

"Let's look at her. Where's Morgow?" Don stood up and the secretary gave him a quick, searching scrutiny. "You'll do," he said. "Lead the way."

Once inside the ship, the secretary turned to the six airmen who stood at attention.

"Until further notice, you are under Mr. Morgow's command," he said. "You are embarking on a very hazardous trip, too important to risk a strange crew. Every one of you is a pilot. Every one will act in whatever capacity you are required. That is all."

There followed three hours of the most intensive training ever given to airmen. And the instruction in operation of the ship was given behind locked doors. Each man must be able to replace every other in an emergency, and each man was being assigned to duty on a type of ship he had never seen.

During this three-hour period, David Hartshorn sat in close conference with the secretary of war; a radio was installed on the wireless ships; and they were ready.

For one last moment Don stood and listened to the secretary's instructions. The enemy had delayed its inland trip by stopping to bomb Philadelphia, and then Pittsburgh.

"Unless you perform a miracle," the great man concluded, "we'll lose our Pacific fleet as we did the other, and be at their mercy. They will probably meet by daybreak. Lord bless you!"

He waved as the uranium door clammed and was bolted tight from the inside. The guard was withdrawn, and like a gray ghost the great ship tilted her nose upward and sped west to do battle with the greatest invading air fleet the world had ever seen. It was three o'clock in the morning.

ONCE in the air, Don released the controls to his instructed pilot and turned to the maps of battle instructions for the great Western fleet which was speeding Eastward to what seemed certain destruction. Then he turned back to watch the men who were handling the liquid, just to be sure they were being cautious enough to avoid mishap. With a last warning to the pilot against feeding full power to the ship except as a final resource in emergency, Don turned his attention to the disintegrator controls, and waited restively.

Dawn was breaking and the gray half light killed any possibility that they might see far enough to warn them of other presences in the air.

Minute after minute, yellow slips were passed to Don by the radio man.

O K STOP EXPECT MYSTERY SHIP STOP LOSING GROUND FAST STOP ODDS AGAINST US MOUNTING

And five minutes later another message which said:

ONLY TWO THIRDS OF OUR FLEET STILL IN AIR STOP LOSING FIVE SHIPS TO ENEMY'S ONE STOP WHEN IS MYSTERY SHIP DUE

Don turned to the operator.

"Reach the commander. Tell him to separate his fleet from the enemy and let us know their relative positions. Tell him to watch closely, that we are coming into the battle in ten minutes and to hold his fire when he sees us. Send it quick!"

Three more precious minutes drifted by with the great ship roaring into the half light at a terrific clip. Then the radio man returned.

"The battle is two hundred miles dead

ahead," he reported. "Our fleet is on the east. They're watching for us."

"Get back to your post and hold tight. Tell the commander it will take us just six minutes. Fire hard for five and a half, then try to be clear of the enemy fleet so we can go through it." Don's face was white.

"Through it, sir?" The airman questioned.

"Yes, through it. Hurry!"

Don signaled at last for full speed ahead and the great ship lurched forward like a race horse. The friction on the hull made the air humid in the cabin. Men held onto their posts for dear life until they became accustomed to the terrific pace. Then after a minute the pilot reported what seemed to be flashes in the air ahead.

"The enemy's new projectiles shooting high explosives, perhaps," he said.

"Head straight for the south fleet," Don ordered.

"Above or below, sir?"

"Straight through." Don was risking everything on the power of his new weapon. There was an audible gasp from the men in the ship as they saw the fleets materialize out of thin air, because of the great speed of their approach.

Three giant battlers were coming headon, and Don pulled his lever back slowly.

"Lord!" the pilot cried aloud, "give some one the controls. My sight is gone or I'm crazy. Three ships were headed toward us, and they're gone."

"Stick there," Don shouted. "We destroyed them. Get a line on some more—quick!"

It was getting lighter. The enemy was apparently in confusion at the sudden withdrawal of the American ships, and the appearance of this mysterious ghost of the air. Its nose turned slightly and Don got a line on twelve more ships. He pulled the lever back slowly and they disappeared as thoroughly as if they had never been in the air, except for the rear end of one of the ships which went floating down toward earth like a kite which has broken away.

A great cluster of enemy ships was turning to fire at this monster, but their speed was so slow in comparison that their move seemed futile. The wonder-ship was suddenly in the midst of the great swarm, and Don faced a mass of ships that seemed to be twenty deep.

With a thumping heart, Don pulled the lever back all the way, and the blockade was gone! The way ahead was clear. They were out of the fleet again and speeding away from it.

"Turn her on a long circle," Don called. "Ease down on the speed to turn, line her up again and go back. But make sure our own ships are not in line."

As the great ship slowed to make the turn, the radio began to pick up signals again. Something in the power or speed had blocked them for the past few minutes.

THE COMMANDER CONGRATULATES YOU ON SUCCESS OF FIRST ATTACK STOP HAVE YOU ANY INSTRUCTIONS AS TO FORMATIONS

"Tell him," Don said quickly, "to keep his ships lurched as much as possible and to repel infiltration of enemy ships. That is all."

"Yes, sir." The radio man was moving about his duties in an axe that made his almost instinctive. And the other men in the new crew were in much the same condition. They still their duty, and did it well, but they were so lost in wonder of it all that fear had been completely lost.

The rush of wind made a whistling sound also, the outer plates as they picked up speed again on their return attack. Don felt like a little boy playing

with dynamite. Even now he had no idea how far the power of his rocket carried. So far it had destroyed everything in its path, and if the power held out——

A shout from the pilot and they tensed at their posts. A line of ships appeared across his sight and he pulled back the lever, shutting his eyes an instant as he did so. When his eyes opened again the ships were gone. The nose of the great ship shifted; Don pulled the lever again and a new hole opened through the enemy fleet. It happened a third time and a dozen more ships were gone from the formation. But they were a target now, hunted as well as hunting.

A fifth line of ships disappeared as shells began bursting near by. The great nose was turning again when the ship gave a lurch to one side and began to fall off her course.

"Hand her all the power!" Don called. "That hit was on the tail and we've got a job at this speed."

MEN grabbed at their supports as the ship lurched forward, but she kept swinging to the right, heading toward the thickest of the enemy planes. Caught off-guard, Don was several feet from his rocket control, but he dove back and pulled out his lever in time to save a crash. Jack whistled as he saw the way open up before them.

"If you didn't get fifty ships that time, Don, I'm a Chinaman!"

But their damage was serious. They came clear of the enemy fleet but their course continued in a circle! Don turned the rocket over to Jack and headed for the stern, taking the radio man with him.

The speed was carrying the ship swiftly in a great circle. Out of control it would put them in line with the American fleet in three minutes. Another jolt told them a second shell had struck close to the first. A gaping hole appeared in the plate by the stern. The wind whistled like a tornado as it caught and tore at the damaged plate. The diameter of their inforced circular course narrowed and they saw that they would again pass through the enemy fleet before the circle carried them through their own.

A piece of the hull plate had turned back over one of the guiding fins. It was hopeless to try to cut it away. The wind at their normal speed would cut a man to pieces.

"Get me a small container of the liquid power, quick. The smallest. And a stick and wire." Don's mind was functioning again. It was a daring, foolhardy stunt he planned to try—but it might work, and in the midst of battle one must take desperate chances.

The tiny vial of liquid which he tied on the stick looked harmless enough, but bracing against the wind, Don poured it along the bent plate, knowing that most of the drops would be swept away by the wind, but hoping that some might remain.

Just as Don tilted the vial, the great ship was again sweeping through the enemy formation, but he didn't know that. He only knew that he feared destruction if his idea went wrong.

The metal reddened and started to drip. He let go of the stick and saw it disappear out through the hole in the hull. His eyes turned from the wind but he watched while the plate melted and bits of it flew off into the air. The molten mass spread, and Don was praying aloud that it would break away before the power reached the hull! He had probably gotten only a few drops of the power against the plate itself, but even so, he was afraid of what it might do.

In another second the whole plate was torn away by the wind and the ship found herself. She was weaving in and out through the American fleet! And she made it with only

one slight collision which sent a ship into a tail spin. Then she was in the open again. Don still gazed at the angry molten metal creeping closer and closer to the hull.

He had been thrown flat when the ship righted herself but he didn't even know that one side of his face was purple from the blow it took when he landed!

Only now it crept into his consciousness that planes had been tossed about like corks at the speed of their passing. Only now did he smile as he saw the power in the metal wane, and the angry molten rod recede until the plate was uranium again!

The uncontrolled period had been less than seven minutes, but it had seemed like seven years! Now they were clear, but they must not dare top speed again. For that liquid power could not have failed to weaken the fin where the torn plate had lain.

Don got slowly to his feet, and was drawn back from the opening by the radio man. Another had been taking the flashes of news, and passed them over to his trembling commander.

> COMMANDER OF MYSTERY SHIP GREETINGS STOP COMMEND YOU ON HANDLING YOUR SHIP WHILE OUT OF CONTROL STOP NO AMERICAN LIVES LOST STOP ONLY ONE PLANE STOP ONE MORE ATTACK OF YOUR FORCE SAY WILL END BATTLE STOP ENEMY SHIPS DEMORALIZED STOP TAKING FIRE AND FALLING SINCE YOUR LAST DASH THROUGH THEM STOP PLEASE MAKE ONE MORE RAID STOP FLEET COMMANDER

Once again the wonder ship turned her nose toward Jupiter. It was a slower trip this time, consequently fraught with greater danger from enemy shells. Deep in his heart Don feared that another hit would be fatal. He knew that if a high explosive shell from a cannon-cracker chanced to enter the hull through the rent in the stern plates it would be the end. But there was no hesitation.

At two hundred miles an hour as they headed back, the wind whistled in like a raging demon. Cold penetrated the clothing which was not planned for open-cockpit flying.

Every man stood tense at his post. Don's hand was on the rocket lever as the enemy flyt loomed before them, certain that he must turn the tide of battle definitely on this final thrust.

Once his hand came back and a [illegible] of air hissed through the lessening [illegible]. Then the pilot called back excitedly.

"Hold it. They've taken formation to surrender. The flagship is flying upside down!"

Don peered in awe as he saw the ships circling slowly toward the earth in threes. The wonder ship nosed up and hovered, circling, as Don saw the American fleet scatter into a huge circle to encompass the enemy as it landed.

An hour passed, and another before the entire enemy fleet was down, and still the wonder ship cruised above the horde of planes like a leader watching over a vast parade of children. The air was quiet now, with the quiet of peace. The world—Don felt it like a song in his heart—would be sane again.

And then, at last, came the radio message telling him to land!

Ten thousand prisoners had been taken and were under guard. The planes, landing three at a time, had been left in formation and their crews disarmed as they climbed out of their ships.

The old campaign soldier who commanded the American fleet showed surprise when he saw Don.

"You in command? And not even in uniform!" he said slowly

"That's right," Don told him. "With the aid of my father's work of twenty years ago, my own work for the last two years, and six of the best aviators the army could supply."

"Washington orders that I return with you aboard your ship," the commander informed him.

Don smiled. "We will need temporary repairs," he said, "and then we will have to travel slowly. We were pretty badly hit, you know."

DON SLEPT while a plate was riveted over the hole in the hull of his mystery ship. But three hours later he stood with the fleet commander in the lens and took off from the scene of battle.

"I understand the principle of the rocket, and of your terrific speed, Morton," the commander told him. "But what set those planes afire and brought them down one after another with you miles in the distance? That, I think, is what threw the fear of Heaven into their hearts. They had nothing to fight!"

Don threw back his head and laughed.

"That," he said gleefully, "was a pure accident, but it's worth remembering, don't you think? You see—I'm not insane. This ship operates on liquid electricity! We dumped some on the plates to melt them off and regain control. I might have known we'd spray their fleet. But it wasn't what we were trying to do!"

Don laughed again, and [illegible] him. The stream of [illegible] lens lifted. He [illegible] le celebrating. The commander still had the fleet which a few hours ago had seemed inevitably lost—and he had added three thousand excellent planes to the American defense forces!

It was late afternoon when the needle ship nosed her way down to the military landing field which was surrounded by a milling mob of deliriously happy people waiting to greet a new national hero.

The secretary of war waited [illegible] David Hartsborn and so did Dorothy. A figure ran across the field as Donald Morton climbed down from the open doorway of the great ship. The man's arm swung back, and there came a flash of fire from the interior of the ship. The running figure stumbled, hesitated, and crumpled down, to lie, an inert heap on the field of welcome. There came a flash and a loud report from [illegible]

Thus it was that Don met his "pocketbook", for the last time, and thus Jack Stacy avenged the wrong which had rankled in him for fifteen long years.

Dorothy ran to Don and threw her arms about his neck.

The secretary smiled and asked, "Is she Mrs. Morton?"

"Not yet," Don answered, and blushed as he kissed Dotty.

"As to your ship," the secretary turned and held his hand out to Jack. "I want to thank you. He had a bomb. He was, as I understand it, responsible for the invasion—and you have saved us an execution."

Turning back to Don, he continued: "Young man, when you are ready to discuss your new ship with us, we are ready to relieve you of the burden of defending the nation." Then he smiled.



The Accursed Galaxy

In which we hear a tale of eternal punishment which came from space

by Edmond Hamilton

A THIN, tearing sound like the ripping of thousands of sheets of paper grew with lightning speed to a vibrant roar that brought Garry Adams to his feet in a jump.

He leaped to the door of his cabin and as he flung it open, he saw a sword of white fire cleave the night vertically and heard an abrupt ear-shattering crash from the distant darkness.

Then all was dark and still again, but down in the dimly starlit valley he could see clouds of smoke slowly rising.

"Good heavens, a meteorite!" Garry exclaimed. "And it's fallen right into my lap."

His eyes suddenly lighted. "Will this make a story! Reporter Sole Witness of Meteor's Fall——"

He grabbed a flashlight from the shelf by the door and the next minute was hurrying down the rude path that twisted from his hilltop cabin down the wooded slope to the valley.

Garry Adams was for fifty weeks of each year a reporter on one of the more sensational New York dailies. But two weeks each summer he spent in this lonely cabin in the northern Adirondacks and washed the taste of slayings, scandals and corruption out of his mouth [illegible] he muttered as he trudged over a root [illegible] "It would rate a three-column picture."

Stopping for a moment at a place where the rude path emerged from the trees, he scanned the darkness of the valley. He spotted the place where faint wisps of smoke were still rising and plunged unhesitatingly in that direction through the brush.

Briers tore Garry's trousers and scratched his hands, and boughs whipped and stung his face as he struggled ahead. He dropped the flashlight once and had a hard time getting it. But before long he heard a crackle of small flames and smelled smoke. He emerged a few minutes later into a hundred-foot circle crushed flat by the impact of the meteorite.

Brush and grass, set afire by the heat of impact, were burning feebly, several places around the edge of this circle, and smoke got into Garry's eyes. He stood blinking, then saw the meteorite.

It was not an ordinary meteorite at all. He saw that at the first glance, even though the thing was half buried in the soft earth which it had flung up around itself. It was a glowing polyhedron ten feet in diameter, its surface a multitude of small flat facets, perfectly geometrical in shape. An artificial polyhedron that had fallen from outer space.

Garry Adams stared, and as he stared [illegible] in his mind [illegible]

"[illegible] from Space" [illegible] from Space that [illegible]——"

What *did* the thing contain? [illegible] a step forward [illegible] cautiously because of the heat the white glow of it betokened. To his surprise, he found that



"Smash it!" Garry yelled. "Don't. . . . Oh!" For as he yelled, the dazed scientist's hands clicked together the last parts of the triangle and——

the polyhedron was not but a'tall. The ground under his feet was hot from the impact but the faceted thing before him was not. Its glow, whatever it was, was not of heat.

Garry stared, his black brows concentrated into a frown beneath which his brain worked excitedly. It must be, he argued, a thing made by intelligent beings, somewhere out in space.

It could hardly contain living beings, for they could not have survived its fall. But there might be books, machines, models——

Garry came to a sudden decision. This story was too big for him to handle

alone. He knew the man he needed here. He turned around and struggled back through the woods to the path, then followed it, not back up to the cabin but on down the valley until it joined a narrow, rude dirt road.

AN HOUR of walking on this brought him to a somewhat better dirt road, and an hour more on this brought him, tired but still vibrant with excitement, into a dark, sleeping little village.

Garry pounded on the door of the general store until a querulous, sleepy storekeeper came down in his nightshirt and let him in. He made straight for the telephone.

"I want to call a Dr. Peters, Dr. Ferdinand Peters of Manhattan University Observatory, in New York," he said to the operator. "And keep ringing until you get him."

Ten minutes later the astronomer's sleepy, irritated voice greeted his ears. "Well, who's this?"

"It's Garry Adams, doctor," Garry said rapidly. "You remember, the reporter who wrote up your solar researches last month?"

"I remember that your story contained no less than thirty errors," Dr. Peters answered acidly. "What in the devil do you want at this time of night?"

Garry talked steadily for five minutes, and when he had finished there was so long a silence that he shouted into the transmitter. "Did you hear me? Are you there?"

"Of course I'm here—don't yell so loud," retorted the astronomer's voice. "I was just considering." He began to speak rapidly. "Adams, I'm coming up to that village of yours on the dot, by plane if possible. You wait there for me and we'll go out and look at the thing together. If you're telling me the truth, you've got a story that will make you famous forever. If you're hoaxing me, I'll flay you alive if I have to chase you around the world to do it."

"Don't let any one else know about it, whatever you do," cautioned Garry. "I don't want any other paper to get it."

"All right, all right," said the scientist. "A lot of difference it makes to me whether any of your filthy rags get it."

Four hours later Garry Adams saw a plane buzzing earthward through the dawn mists east of the village. He waited, and in another half hour the astronomer tramped into the place.

Dr. Peters saw Garry and came straight toward him. Peters' keen, spectacled black eyes and ascetic, shaven face wore an expression in which were mixed doubt and repressed excitement.

Characteristically, he wasted no time in greetings or preliminaries. "You're sure the thing is a geometrical polyhedron? Not just a natural meteorite with some resemblance to that shape?" he queried.

"Wait till you see it for yourself," Garry told him. "I've rented a car that will take us almost there."

"Drive out to my plane first," the doctor ordered. "I've brought some equipment that may prove useful."

The equipment consisted of bars, tools and wrenches of fine steel and a complete oxy-acetylene torch outfit, with the necessary tanks. They stowed it into the back of the car and then bumped and rattled over the uncertain mountain roads until they reached the beginning of the path.

When Dr. Peters emerged with the reporter into the clearing where lay the half-buried, glowing polyhedron, he stared at it for some moments in silence.

"Well?" asked Garry impatiently.

"It's not a natural meteorite, that's sure."

"But what is it?" Garry exclaimed. "A projectile from another world? What's in it?"

"We'll know that when we've opened it," Peters answered coolly. "The first

thing is to dig away the dirt so that we can examine it."

Despite the astronomer's calmness, Adams saw a glitter in his eyes as they lugged the heavy equipment from the automobile to the clearing. And the driving energy with which Dr. Peters worked was further index of the intensity of his interest.

They started at once digging away the earth around the thing. Two hours of hard work did it, and the whole polyhedron stood naked before them, still glowing whitely in the morning sunlight. The scientist then made minute examination of the substance of the glowing thing. He shook his head.

"It's not like any terrestrial substance ever heard of. Is there any sign of a door or opening?"

"Not a trace of one," Garry answered, then added suddenly, "But here's something on one of the facets, a sort of diagram."

Dr. Peters hurried quickly to his side. The reporter pointed to what he had discovered, a curious and complex sign graven deep on a facet halfway up the side of the polyhedron.

The diagram represented a small, spiral-shaped swarm of densely crowded dots. A little out from this central swarm were other little swarms of graven dots, mostly spiral-shaped also. Above this curious diagram was a row of grotesque, interlinked symbols.

"By heaven, it's writing of some sort, an inscription!" Garry cried. "I wish we had a photographer here."

"And a pretty girl to sit with her knees crossed and give the picture sex-appeal," Peters observed caustically. "You can think of your dirty sheet in the presence of—this."

His eyes were brilliant with controlled excitement. "The symbols, we can't guess what they mean, of course. Undoubtedly they tell something about this thing's contents. But the diagram——"

"What do you think the diagram means?" Garry asked excitedly as the astronomer paused.

"Well, those swarms of dots seem intended to represent galaxies of stars," Peters said slowly. "The central one, no doubt, symbolizes our own galaxy, which has just such a spiral shape, and the other swarms stand for the other galaxies of the cosmos.

"But they're too close to ours, those others—too close. If they were actually that close when this thing was made, it means that the thing was made back when the universe first started to expand!"

He shook off his abstracted ponderings and turned briskly toward the pile of tools and equipment.

"Come on, Adams, we'll try to open it up on the side opposite the inscription. If the bars won't do it, the torch will."

TWO HOURS LATER Garry and Dr. Peters, exhausted, sweating and baffled, stood back and gazed at each other in wordless futility. All of their efforts to open the mysterious polyhedron had utterly failed.

Their sharpest tools made not the slightest scratch on the glowing walls. The oxy-acetylene torch had not the least bit more effect, its flame not even seeming to heat the substance. And even a variety of acids which Dr. Peters had brought with him had no effect.

"Whatever it is," Garry panted, "I'll say it's the hardest and most intractable matter I ever heard of."

The astronomer nodded slowly. "If it is matter at all," he said.

Garry stared. "If it is matter? Why, we can see the thing's matter; it's solid and real as we are."

"It's solid and real," Peters agreed. "But that does not prove that it is matter. Adams, I think that it is force of some kind, crystallized in some superhuman and unknown way into a solid-seeming polyhedron. Frozen force!

"And I don't think we'll ever open it

with ordinary tools. They would work with ordinary matter, but not with this thing."

The reporter looked perplexedly from him to the glowing mystery. "Frozen force? Then what are we going to do?"

Peters shook his head. "The thing's beyond me. There isn't a way in the world that I can think of to——"

He stopped suddenly. Garry, looking up sharply at the interruption in his words, saw that an odd listening expression had fallen upon the scientist's face.

It was at the same time an expression of surprise, as though some part of his mind were surprised at something another part told it.

Dr. Peters spoke in a moment, and with the same surprise in his voice.

"Why, what am I talking about? Of course we can open the thing. A way just occurred to me—— The thing is made of crystallized force. Well, all we need to do is to de-crystallize that force, to melt it away by the application of other forces."

"But surely it's beyond your scientific knowledge how to do a thing like that!" the reporter said.

"Not at all; I can do it easily but I'll need more equipment," the scientist said.

He fished an envelope and pencil from his pocket and hastily jotted down a list of items. "We'll go into the village and I'll telephone New York to have these things rushed up."

Garry waited in the village store while the astronomer read his list into the telephone. By the time this was done and they returned to the clearing in the valley woods, darkness had fallen.

The polyhedron was glowing weirdly in the night, a shimmering, faceted enigma. Garry had to tear his companion away from his fascinated inspection. He finally did so and they climbed to the cabin and cooked and ate a sketchy supper.

The two sat after supper and tried to play cards by the light of the kerosene lamp. Both men were silent except for the occasional monosyllables of the game. They made error after error, until at last Garry Adams flung the cards down.

"What's the use of this? We're both too wrought up over that darned thing down there to give a thought to anything else. We might as well admit that we're dying with curiosity. Where did the thing come from and what's in it? What do those symbols on it mean, and that diagram you said represented the galaxies? I can't get it all out of my head."

Peters nodded thoughtfully. "Such a thing doesn't come to earth every day. I doubt if such a thing has ever come to earth before."

HE SAT staring into the soft flame of the lamp, his eyes abstracted and his ascetic face frowning in intense interest and disturbed perplexity.

Garry remembered something. "You said when we looked at that queer diagram on it that it might mean the polyhedron was made when the universe first started expanding. What the devil did you mean *by* that? *Is* the universe expanding?"

"Of course it is. I thought every one was aware of the fact," Dr. Peters said irritably.

Then he smiled suddenly. "But I keep forgetting, since I associate almost always with fellow scientists, how completely ignorant most people are of the universe in which they live."

"Thanks for the compliment," Garry said. "Suppose you enlighten my ignorance a little on this point."

"Well," said the other, "you know what a galaxy is?"

"A swarm of stars like our sun, isn't it—a whole lot of them?"

"Yes, our sun is only one of billions of stars gathered together in a great swarm which we call our galaxy. We

know that the swarm has a roughly spiral shape and that as it floats in space the whole spiral swarm is rotating on its center.

"Now, there are other galaxies in space beside our own, other great swarms of stars. It is estimated, indeed, that their number runs into billions and each of them, of course, contains billions of stars. But—and this has seemed to astronomers a curious thing—our own galaxy is definitely larger than any of the others.

"Those other galaxies lie at enormous distances from our own. The nearest is more than a million light years away and the others are much farther. And all of them are moving through space, each star cloud sweeping through the void.

"We astronomers have been able to ascertain the speed and direction of their movements. When a star, or a swarm of stars, is moving in the line of sight of the observer, the movement has a definite effect upon its spectrum. If the swarm is moving away from the observer, the lines in its spectrum will shift toward the red end of the spectrum. The faster it is moving away, the greater will be the shift toward the red.

"Using this method, Hubble, Humason, Slipher and other astronomers have measured the speed and direction of movement of the other galaxies. They have found an amazing thing, a thing that has created a tremendous sensation in astronomical circles. They have found that those other galaxies are all running away from our own!

"It is not just a few of them that are moving away from our own but all of them. In every side, every galaxy in the cosmos is hurtling away from our own galaxy! And they are doing so at speeds as high as fifteen thousand miles a second, which is almost a tenth the speed of light itself.

"At first astronomers could not believe their own observations. It seemed incredible that all other galaxies should be fleeing from our own, and for a time it was thought that certain of the nearer ones were not receding. But that has been seen to be an observational error and we now accept the incredible fact that all other galaxies are flying away from our own.

"What does that mean? It means that there must once have been a time when all those outward-speeding galaxies were gathered with our own into a single giant supergalaxy that contained all the stars in the universe. By calculating back from their present speeds and distances, we find that that time was about two billion years ago.

"Then something made that supergalaxy suddenly break up, and all its outer portions went flying off into space in all directions. The portions that flew off are the galaxies that are still flying away from us. Our own is without doubt the center or core of the original supergalaxy.

"What caused that break-up of the gigantic supergalaxy? That we do not know, though many theories have been advanced. Sir Arthur Eddington believes that the break-up was caused by some unknown principle of repulsion in matter which he calls the cosmical constant. Others have suggested that space itself started expanding, an even more incredible explanation. Whatever the cause, we know that that supergalaxy did break up and that all the other galaxies formed by its break-up are flying away from our own at tremendous speeds."

Garry Adams had listened intently to Dr. Peters as the astronomer spoke in quick, nervous fashion.

His own lean, newly tanned face was serious in the glow of the lamp. "It seems strange, at that," he commented. "A cosmos in which all the other galaxies are fleeing from us. But that diagram on the side of the polyhedron—you said that indicated the thing was made when the expansion first started?"

"Yes." Peters nodded. "You see, that diagram was made by intelligent or superintelligent beings, for they knew our own galaxy is spiral-shaped and so depicted it.

"But they depicted the other galaxies as almost touching our own. In other words, that diagram must have been made when the giant supergalaxy first started breaking up, when the other galaxies first started running away from our own. That was some two billion years ago, as I said. Two thousand million years. So you see, if the polyhedron was actually made that long ago it——"

"I see enough to feel that I'm going crazy with speculation," Garry Adams said, getting to his feet. "I'm going to bed, whether I'm able to sleep or not."

Dr. Peters shrugged. "I suppose we might as well. The equipment I sent for won't be out until morning."

Garry Adams lay thinking in the darkness after he had retired to the upper of the two bunks in the cabin. What was this visitant from outer space and what would they find in it when they opened it?

His wonderings merged into sleep misty out of which he suddenly awoke to find the cabin bright with morning sunshine. He woke the scientist and after a hasty breakfast they hurried down to the point on the dirt road where Dr. Peters had directed the ordered equipment to be brought.

They had waited there but a half hour when the sleek high-speed truck came humming along the narrow road. Its driver halted it at sight of them, and they helped him unload the equipment it carried. Then he drove back the way he had come.

GARRY ADAMS surveyed the pile of equipment dubiously. It looked too simple to him, consisting only of a dozen or so sealed containers of chemicals, some large copper and glass containers, a pile of copper strips and wiring, and some slender ebonite rods.

He turned to Dr. Peters, who was also gazing at the pile.

"This sure looks like a lot of junk to me," the reporter said. "How are you going to use this stuff to de-crystallize the frozen force of the polyhedron?"

Dr. Peters turned to him a blank, bewildered stare. "I don't know," he answered slowly.

"You don't know?" Garry echoed. "Why, what do you mean? Yesterday there at the polyhedron you said it was quite clear to you how to do it. You must have known, to order all this stuff."

The astronomer seemed even more bewildered. "Garry, I remember that I did know how then, when I jotted down the list of these things. But I don't now. I haven't the slightest idea of how they could be used on the polyhedron."

Garry dropped his arms, stared unbelievingly at his companion.

He started to say something, but as he saw the other's evident mental distress he checked himself.

"Well, we'll take the stuff over to the polyhedron now," he said calmly. "Maybe by that time you'll remember the plan you've forgotten."

"But I've never before forgotten anything in this way," Peters said dazedly as he helped pick up the mass of things. "It's simply beyond my understanding."

They emerged into the crushed clearing where the enigmatic polyhedron still glowed and shimmered. As they set down their burdens beside the thing, Peters burst suddenly into a laugh.

"Why, of course I know how to use this stuff on the polyhedron. It's simple enough."

Garry stared at him again. "You've remembered?"

"Of course," the scientist answered confidently. "Hand me that biggest box marked barium oxide, and two of those containers. We'll soon have the polyhedron open."

The reporter, his jaw hanging in surprise, watched Peters start confidently to work with the supplies. Chemicals foamed together in the containers as rapidly as he mixed them.

He worked swiftly, smoothly, without asking any aid of the reporter. He had an utter efficiency and utter confidence, so dissimilar to his attitude of a few minutes before, that an incredible idea was born and grew in Garry Adams' mind.

He said suddenly to Peters. "Doctor, you know completely what you're doing now?"

Peters looked up impatiently. "Of course I do," he replied sharply. "Doesn't it look like it?"

"Will you do something for me?" asked Garry. "Will you come back with me to the road where we unloaded the supplies?"

"Why in the world do that?" demanded the scientist. "I want to get this finished."

"Never mind; I'm not asking for fun but because it's important," Garry said. "Come on, will you?"

"Oh, damn such foolishness, but I'll go," the scientist said, dropping his work. "It'll lose us half an hour."

Fuming over this, he tramped back with Garry to the dirt road, a half mile from the polyhedron.

"Now what do you want to show me?" he snapped, looking around.

"I only want to ask you something," Garry said. "Do you still know how to open the polyhedron?"

Dr. Peters' expression showed pure anger. "Why, you time-wasting young fool! Of course I——"

HE STOPPED suddenly, and abruptly panic fell on his face, blind terror of the unknown.

"But I don't!" he cried. "I did there a few minutes ago but now I don't even know just what I was doing there!"

"I thought so," said Garry Adams, and though his voice was level there was a sudden chill along his spine. "When you're at the polyhedron, you know well enough how to go about a process that is completely beyond present-day human science.

"But as soon as you go some distance away from the polyhedron, you know no more about it than any other scientist would. Do you see what it means?"

Peters' face showed astounded comprehension. "You think that something—something about that polyhedron, is putting into my mind the way to get it open?"

His eyes widened. "It seems incredible, yet at that it may be true. Neither I nor any other scientist of earth would know how to melt frozen force. Yet when I'm there at the polyhedron I *do* know how to do it!"

Their eyes met. "If something wants that open," Garry said slowly, "it's something inside the polyhedron. Something that can't open it from the inside, but is getting you to do so from the outside."

For a space of seconds they stood in the warm morning sunlight looking at each other. The woods around them gave off a smell of warm leaves, a sleepy hum of insects. When the reporter spoke again, his voice was unconsciously lower than it had been.

"We'll go back," he said. "We'll go back, and if you know how again when we're at the thing, we'll know that we're right."

They walked silently, hesitatingly, back toward the polyhedron. Though he said nothing, the hair rose on Garry Adams' neck as they entered the clearing and approached the glowing thing.

They went closer until they stood again beside the thing. Then Peters suddenly turned a white face toward the reporter.

"You were right, Garry!" he said. "Now that I'm back here beside the thing, I suddenly know how to open it!"

"Something inside must be telling me, as you said. Something that ages ago was locked up in this and that wants—freedom."

A sudden alien terror fell upon them both, chilling them like a gelid breath from the unknown. With a common impulse of panic they turned hastily.

"Let's get away from it!" Garry cried. "For Heaven's sake, let's get out of here!"

Four steps only they ran when a thought sounded in Garry's brain, clear and loud.

"Wait!"

The word, the pleading request, was as strong in his mind as though his ears had heard it.

Peters looked at him with wide eyes as they unconsciously stopped.

"I heard it, too," he whispered.

"Wait, do not go!" came the rapid thought message into their minds. "Hear me at least, let me at least explain to you, before you flee!"

"Let's go while we can!" Garry cried to the scientist. "Peters, whatever's in that thing, whatever is talking to our minds, isn't human, isn't of earth. It came from outside space, from ages ago. Let's get away from it!"

But Dr. Peters was looking fascinatedly back at the polyhedron. His face was twisted by conflicting emotions.

"Garry, I'm going to stay and listen to it," he said suddenly. "I've got to find out what I can about it—if you were a scientist you'd understand! You go on and get away; there's no reason for your staying. But I'm going back."

Garry stared at him, then grinned crookedly though he was still a little white beneath his tan. He said, "Just as a scientist is ridden by his passion, doctor, so is a reporter by his. I'm going back with you. But for Heaven's sake don't touch that equipment; don't try to open the polyhedron, until we at least have some idea as to what kind of thing is inside."

Dr. Peters nodded wordlessly and then slowly they moved back to the gleaming polyhedron, feeling as though the ordinary sunlit noonday world had suddenly become unreal. When they neared the polyhedron, the thoughts from within it beat more strongly into their minds.

"I sense that you have stayed. Come closer to the polyhedron—it is only by immense mental effort that I can force my thoughts through this insulating shell of force at all."

Numbly they stepped closer until they were at the very side of the faceted, glowing thing.

"Remember," Garry whispered hoarsely to the scientist, "no matter what it tells us, what it promises, don't open it yet!"

The scientist nodded unsteadily. "I'm as afraid of opening it as you are."

THE THOUGHT MESSAGES came clearer into their brains now from the polyhedron.

"I am a prisoner in this shell of frozen force, as you have guessed. For a time almost longer than you can comprehend, I have been prisoned in it. My prison has at last been cast on your world, wherever that may be. I want your help now and I sense that you are too afraid to help me. If I disclose to you who I am and how I came to be here, you will not then be so afraid. That is why I wish now to tell you these things."

Garry Adams felt as though he stood in a strange dream as the thoughts from the polyhedron beat into his brain.

"Not in mere thought messages will I tell you what I wish to tell, but visually by thought pictures that you can understand better. I do not know the capacity of your mental systems for reception of such pictures, but I will try to make them clear.

"Do not try to think about what you see, but merely allow your brains to remain in receptive condition. You will

see what I wish you to see and will understand at least partially because my thoughts will assist you the visual impressions."

Garry felt sudden panic as the world seemed sucked away from around him. Dr. Peters, the polyhedron, the room—everything spun away, disappeared in an instant. Instead of standing in the sunlight, Garry seemed now to himself to be hanging suspended in the black vault of the cosmos—a lightless, airless void.

Everywhere about him was only that empty blackness, save below him. Below him, far, far below, there floated a colossal cloud of stars shaped like a flattened globe. Its stars could be counted only by the millions of millions.

Garry knew that he looked on the universe as it was two billion years ago. He knew that this below him was the giant supergalaxy in which were all the stars in the cosmos. Now he seemed to rocket down toward the mighty swarm with the swiftness of thought, and now he saw that the worlds of its swarming suns were inhabited.

Their inhabitants were sentient beings of force, each one like a tall, disk-crowned pillar of blue-brilliant light. They were immortal; they needed no nourishment; they passed through space and matter at will. They were the only sentient beings in the whole supergalaxy and its inert matter was almost entirely at their command.

Now Garry's viewpoint shifted to a world near the center of the supergalaxy. There he saw a single force creature who was engaged in a new experiment upon matter. He was seeking to build new forms of it, combining and re-combining atoms in infinite permutations.

Suddenly he came upon a combination of atoms that gave strange results. The matter so formed moved of its own accord. It was able to receive a stimulus and to remember it and act upon it. It was able also to assimilate other matter into itself, and so to grow.

The force creature experimenter was fascinated by this strange disease of matter. He tried it on a larger scale and the diseased matter spread out and assimilated more and more ordinary matter. He named this disease of matter by a name that reproduced itself in Garry's mind as "life."

This strange disease of life escaped from the experimenter's laboratory and began to spread over all that planet. Everywhere it spread, it infected other matter. The experimenter tried to extirpate it but the infection was too widely spread. At last he and his fellows abandoned that diseased world.

But the disease got loose from that world to other worlds. Spores of it, driven by the push of light waves, went to other suns and planets, spread out in every direction. The life disease was adaptable, took different forms on different worlds, but always it grew and propagated, infected more and more matter.

The force creatures assembled their forces to wipe out this loathsome infection—but could not. While they stamped it out on one world, it spread on two others. Always, too, some hidden spore escaped them. Soon nearly all the worlds of the central portion of the supergalaxy were leprous with the life plague.

Garry saw the force creatures make a last great attempt to stamp out this pathology infecting their universe. The attempt failed; the plague continued its resistless spread. The force creatures then saw that it would spread until it had infected all the worlds in the supergalaxy.

They determined to prevent this at all costs. They resolved to break up the supergalaxy, to detach the uninfected outer parts of it from the diseased central portion. It would be a stupen-

dous task but the force creatures were not daunted by it.

Their plan entailed giving to the supergalaxy a rotatory movement of great speed. This they accomplished by generating tremendous waves of continuous force through the ether, waves so directed that gradually they started the supergalaxy rotating on its center.

Faster and faster the giant star swarm turned as time went on. The life disease was still spreading at its center but now the force creatures had hope. They continued their work until the supergalaxy was turning so fast that it could no longer hold together against its own centrifugal force. It broke up like a bursting flywheel.

GARRY SAW that break-up, as though from high above. He saw the colossal, spinning star cloud disintegrating, swarm after swarm of stars breaking from it and flying away through space. Countless numbers of these smaller new galaxies broke from the parent supergalaxy until at last only the inmost core of the supergalaxy was left.

It was still rotating, and still had the spiral form caused by its rotation. On it now the life plague had spread to nearly every world. The last swarm of clean, uninfected stars had broken away from it and was flying away like the others.

But as this last swarm departed, there took place a ceremony and a punishment. The force creatures had passed judgment upon that one of their number whose experiments had loosed the life plague upon them and had made necessary this great break-up.

They decreed that he should remain forever in this diseased galaxy that all the others were leaving. They imprisoned him in a shell of frozen force so constructed that never could he open it from within. They set that polyhedronal shell floating in the diseased galaxy they left behind.

Garry Adams saw that glowing polyhedron floating in aimless orbits in the galaxy as the years passed in millions. The other galaxies sped farther and farther away from this infected one in which the life disease now covered every possible world. Only this one force creature remained here, prisoned eternally in the polyhedron.

Garry dimly saw the polyhedron, in its endless orbit through the suns, chance to strike upon a world. He saw——

He saw only mists, gray mists. The vision was passing and suddenly Garry was aware that he stood in hot sunlight. He stood by the glowing polyhedron, dared, rapt.

And Dr. Peters, dared and rapt, too, was working mechanically on something beside him, a triangular thing of copper and clamite jointed at the polyhedron.

Garry understood instantly and cried out in horror as he leaped toward the astronomer. "Peters; *don't!*"

Peters, only partly awakened, looked dazedly down at the thing which his hands were busy finishing.

"Smash it!" Garry yelled. "The thing inside the polyhedron kept us occupied with that vision so it could keep you working unconsciously to set it free. Don't—oh, Lord!"

For as Garry yelled, the dared scientist's hands had clicked together the last parts of the copper and clamite triangle, and from its apex leaped a yellow beam that smote the glowing polyhedron.

The yellow flash spread instantly over the faceted, glowing folk, and as Garry and the waking Peters stared petrifiedly, they saw the polyhedron dissolving in that saffron flare.

The faceted sides of frozen force melted and vanished in a moment. Up out of the dissolved prison cage burst and towered the Thing that had been in it.

A forty-foot pillar of blazing, blue

light, crowned by a disk of light, it loomed supernally splendid in sudden darkness, for with its bursting forth the noonday sunlight had snapped out like turned-off electricity. It swirled and spun in awful, alien glory as Peters and Garry cried out and threw their hands before their blinded eyes.

From the brilliant pillar there beat into their minds a colossal wave of exultation, triumph beyond triumph, joy vaster than any human joy. It was the mighty pæan of the Thing, that went out from it not in sound but in thought.

It had been prisoned, cut away from the wide universe, for age after slow-crawling age, and now at last it was free and rejoicing in its freedom. In unbearable madness of cosmic rapture it loomed in the noonday darkness.

Then it flashed up into the heavens like a giant lightning bolt of Sun. And as it did so, Garry's darkening brain failed and he staggered into unconsciousness.

HE OPENED his eyes to bright noonday sunlight, which was streaming through the window beside him. He was lying in the cabin and the day was again brilliant outside, and somewhere near by a metallic voice was speaking.

He recognized that the voice was coming from his own little battery radio. Garry lay unmoving, unremembering for the moment, as the excited voice hurried on.

"——far out as we can make out, the area affected extended from Montreal as far south as Scranton, and from Buffalo in the West to some miles in the Atlantic beyond Boston, in the East.

"It lasted less than two minutes, and in the whole area was a complete blotting out of the sun's light and heat in that time. Also, practically all electrical machinery ceased to function and the telegraph and telephone lines went completely dead.

"People living in certain Adirondack and Northwest Vermont sections have reported also some physical effects. They consisted of a sudden sensation of extreme joy, coincident with the darkness, and followed by brief unconsciousness.

"No one yet knows the cause of this amazing phenomenon though it may be due to a freak of solar forces. Scientists are now being consulted on the matter, and as soon as they——"

Garry Adams by this time was struggling weakly up to a sitting position in the bunk, clutching at its post.

"Peters!" he called over the metallic voice of the radio. "Peters——"

"I'm here," said the astronomer, coming across the cabin.

The scientist's face was pale and his movements a little unsteady, but he, too, was unhurt.

"I came back to consciousness a little sooner than you did and carried you up here," he said.

"That—that Thing caused all the darkness and other things I've just been hearing of?" Garry cried.

Dr. Peters nodded. "It was a creature of force, force so terrific that its bursting forth here damped the heat and light radiations of the sun, the electrical currents of machines, even the electro-nervous impulses of our brains."

"And it's gone; it's really gone?" the reporter cried.

"It's gone after its fellows, out into the void of intergalactic space after the galaxies that are receding from our own," said Dr. Peters solemnly.

"We know now why all the galaxies in the cosmos are flowing from our own, know that ours is held an accursed galaxy, leprous with the disease of life. But I don't think we'll ever tell the world."

Garry Adams shook his head weakly. "We won't tell; no. And I think we'll try to forget it ourselves. I think we'll try."



The old ship plowed into the cone of force steadily. The men were too intent to realize they had not expected her to hold together this long!

Menace from Saturn

by Clifton B. Kruse

THE LIFT clicked to its topmost point, the eighteenth level, and the grilled door raised open to discharge the squad of eight leather-skinned men who shuffled mechanically down the gravelled hallway toward the central dome room.

"Twice! their reporting!" The foremost of the eight returned the salute of the door graybeard who had just swung back the main door to admit them. "There are twenty-three in the company this morning."

Old Mardeo chewed vigorously upon his mouthful of weedlie weed, nodded curtly and spat forth a yellow stream before speaking.

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"You can cut short on your swathers, Wiljon Kar, but I'm warning you that all four dome riders will have their hands full. 'Tis the curse o' this hell's planet upon mankind, I'm saying." Then jerking a thumb toward the central chamber he growled, "Pruck's waiting for you and he's in a fine stew about everything from Earth to this devil's hole we call Venus. 'Know we haven't had a flash from Earth yet?"

The leader of the squad, Wiljon Kar, barked an order that the men go to their posts at once and prepare to relieve the crew on duty. The men moved doubtfully their faces strangely set.

It had been three months now, by

Earth time, since the last space transport had returned to the rich though precarious dome city upon poisonous Venus. Returning transports brought Earthly food, pure oxygen and, occasionally, new men to relieve those who had served their seven-year contract.

Then Earthward again, their holds packed with the wondrous Venusite as well as countless other treasures from the forbidding planet. But the dome city could support human life only so long as the precious free oxygen supply could be made to last. Six months in comfort, a little longer if necessary.

Three long, weary months had gone by with no visit from a transport. Wiljon Kar ruminated soberly as he entered the control chamber. The prospect of another long shift of watching and waiting was not pleasant. Moreover, upon the men must be left to their constant warfare against the creeping, deadly, stifling green atmosphere of Venus.

[illegible]

[illegible]

[illegible]

then he could quickly and safely release Gellert his needed water and oxygen. But until that transport signal should appear men must die by scale fever that a possible handful of survivors might hold the great aeriotex dome even until there was no more air to breathe and no more water to drink.

Suddenly Prock jerked forward stiffly, his bony forefinger pointing toward the chart and his voice rising to a screech.

"Wiljon, look! The chart—dome rider Number 4—he's—he's——"

Wiljon Kar stared for a moment. Shock made his muscles rigid. The red light indicated dome rider Number 4 was wavering crazily. Massing of colors on the visor plate below indicated a huge bulge in the surface of the dome.

"It's Fujik!" Wiljon Kar caught his breath sharply, whirling to face Prock. "Take my place. I'm going out there."

Prock started to voice some reply. Just then the red light which marked Number 4's position went dark. The man had fallen!

WILJON KAR shaded from the control room, hurling his body beyond the weather lock with their great, mortar-shaped [illegible] reached the narrow balcony which completely surrounded the tall central tower. The engineer's hands shook as he donned the straps of a dome rider's harness. Then, raising the disk to which the straps were attached he leaped up, clapping the plate-like disk to the under surface of the [illegible]

He shouted out. Now his legs dangled [illegible] the ground. The straps [illegible] body in a semi-prone [illegible] the disk. By kicking or slipping [illegible] the underside texture [illegible] the supporting disk would [illegible] like a sled on [illegible]

[illegible] there. Wiljon Kar [illegible] fixing at a dizzy pace [illegible] across the dome expanse. The aeriotex was in reality a tough, gaseous bubble which swelled upon the surface of Venus. Within was breathable air, but beyond its twelve-foot thickness were the lashing gales of caustic clouds, ammonia, swamp gases and, intermingled with these, the poisonous green vapor—the true air of Venus.

Speedily now he checked his frantic glide. Before him loomed the hideous bulge pushing down into the dome many times the length of a man's body. But how long could even the tough aeriotex film withstand such a strain? Now he was upon the swell. Cautiously he let the disk make the swerve which permitted his dangling body to ride down upon the bulge.

Wiljon Kar steadied himself. Sweat gathered in streams upon his forehead. Yet he must remain calm. He was releasing the compressor gun at his belt. Now pressing the nose of the gun to the bulge he started the mechanism. Instantly the gun leaped into action, vibrating so that it was necessary for him to hold it clutched firmly in his two hands.

A strong current of air swirled about him. The gun was stirring up a cyclonic current of air and directing its drive straight against the bulge. It was dangerous. Constant shifting of his position was required in order to hold the supporting disk firmly against the resisting aeriotex. Steadily now he worked from point to point, swinging from one edge of the swell to the other. Gradually the force of the gun was [illegible] strained stuff of the bubble [illegible]

[illegible] meaningless. Wiljon [illegible] for thought. Any [illegible] wrinkle in the surface of the dome might loosen the hold of the supporting disk. But he was winning. The force of the peculiar gale [illegible] was counterbalanced by the steady drive of the air blast.

Then, with a last crackling *pop*, the dome straightened out. Wiljon Kar snapped off the gun and hung back. He was sick and incredibly weary. His arms felt strangely numb. Every nerve in his body seemed to throb with a biting pain of its own. Weakly he kicked against the aerostat. His body was sliding back over the undersurface of the dome toward the central tower.

Releasing himself from the straps, Wiljon Kar stumbled beyond the balcony on into the first room. Three swathers were energetically manipulating their queer-looking ray guns as they cut broad swaths above the dome city, thus permitting a few feeble rays of the Sun to reach down beneath the blanketing atmosphere of Venus.

Sunlight will not do us much good if the dome does not hold, Wiljon Kar was thinking. Thus he called to the sturdiest of the three swathers, ordering the man to shut off his gun and don a dome rider's straps. The man grinned sheepishly; nevertheless, he did as the engineer ordered. Even should the dome shudder and release his supporting disk, death would be fairly quick. But to catch the dread scale fever—ugh!—he had seen men suffer in rotting misery for days.

Pruck looked up as Wiljon Kar entered. A strange light gleamed in the older man's eyes. His long, fishshaped fingers were quivering.

"Wiljon Kar," he rasped out in a tense, broken voice, "I have found the answer. Come here."

The younger man glanced at the apparatus. He had seen it before, setting himself a class of Martian rodents. Hastily he pulled the three stunt cots over toward the senior engineer.

Pruck was adjusting carefully the energy-filter screen. It was a small photographic reproduction of the faintly invisible energy images caught by the telescope. In principle it was worked much as infra-red photography in modern astronomy.

At first the pictures appeared little altered from those seen by regular Sunlight. Then Pruck's shaking old finger pointed out something else. Wiljon Kar stared breathlessly. Slowly he saw the almost unbelievable evidence.

From distant Saturn a great webbike cloud snaked its way across the black of space, enmeshing Earth completely.

Pruck's wiry little frame was all energy. The normally colorless eyes seemed to burn vividly with some terrific inner fire.

"I ask myself what it is—I cannot answer—save that it is webbike and that it evidently comes from Saturn. But see! It does not move. Mother Earth looks like nothing so much as a weary old horsefly helplessly entangled in a gigantic spider web!"

HOURS PASSED while the two engineers measured and studied the unnatural phenomenon. Gradually the lines of their faces became set as the fearful significance became apparent. Slowly, steadily the web of ingeniously controlled energy was tightening its grip upon Earth. As the lines seemed to converge they would sparkle with their pentane energy. The core of the vast web reached far beyond to the ominous red bulk of ringed Saturn.

The very mention of the dread name of Saturn caused quiverings to shudder [illegible] to glimmer in the eternal [illegible] of space, and it was the crimson of blood lust made real. Those behind the space-spanning Interplanetary were the most powerful and best equipped of their expeditions to the sinister steam-filled planet. Yet no ship had ever returned and no signal beam had ever flashed back a hint of the menace of Saturn. Mars, Venus, Neptune and even the airless desolation of little Mercury were held in the name of the Earthman's commerce. But Saturn! Wiljon

Kar's eyes grew lustrous with brooding thought, and old Prock shook his head slowly, mumbling his dejection.

"It is now death," Prock was chanting. "Death to the dome city of Venus—perhaps death even for all of humankind."

The older man's dirge irritated the junior engineer. His jaws were set with belligerent desperation. His strong hands clenched with the fierceness of his concentration.

"No! By the very omniscience of galaxies, no! Look closely, Prock. Put your spectroscope, element H, on the reflectors. Study them. We'll do something yet. We must do something. Man, do you know that the future of humanity may rest with us—with you and me?"

The harangueing voice cut through the trance of the senior engineer, fired his blood, brought a fighting gleam to his eyes. He did as Wiljon Kar ordered, forgetting in the crisis of the moment such vagaries as man-defined rank. He was adjusting the delicate instruments, working swiftly yet with remarkable accuracy. Now the element H, the factor of ray diagnosis, was throbbing in subtle response to the reflected image of the slowly converging web.

"Cosmic rays?" Wiljon Kar examined the inlaid scroll. "But no—not the natural phenomenon—the curve is more pronounced!"

Prock was alert now, his face showing the stream of enthusiastic labor. "Right, comrade. But see, I recognize the results. Have you not studied the atomic disintegration researches conducted [illegible] Professor Angus [illegible] instantaneous disintegration of hydrogen atoms and their subsequent reconstruction? The experiment was marked by a release of rays [illegible] be termed [illegible] the atom."

"But you think——"

"Quick! This web is really matter in unorganized state—free protons, neutrons and electrons under artificial control—once properly organized atoms but now shot out across space as ray energy. Wait! Focus the telescope upon Saturn. No, not upon the planet itself. I have a premonition. If my deduction is correct we should discover something startling taking place in the rings of Saturn. Quick!"

Wiljon Kar's hands shook as he brought the narrow ribbon of Saturn's awe-inspiringly beauteous rings into direct focus.

"Look! The rings are diminishing."

"They appear to be afire."

"It is not flame, but energy in concentration. Now, you can see yellowish beams reaching out from the planet itself. And see those four deep-purple bands? The yellow beams are disintegrating the rings, concentrating the disorganized atoms of the matter into four globes of fire. It's clear now. The purple bands are gathering the free energy of matter and driving it across space to Earth. Colossus!"

Wiljon Kar was dripping with perspiration. He was directing the great telescope toward Earth. The two engineers gasped. The web of nefarious energy was steadily massing about the planet. Even as they watched they saw the bright lines grow, narrowing the interspace.

"Don't you see it? The disintegrated matter of the rings is being shot to Earth. As soon as a sufficient mass has been carried across the Saturnians will reverse the 'disintegrating process.'" Prock's face whitened as he uttered the words. "Our Earth will be changed to a [illegible] matter!"

"No!" Wiljon Kar [illegible] the [illegible] "It cannot!"

[illegible] Prock shrieked. His fat [illegible] toward the majestic [illegible] Saturn. "Extinction! Man will be no more!"

The half-screamed words of the senior engineer raged through Wiljon Kar's taut nerves, challenged him. For the moment a heavy, oppressive silence bore down upon the two. Wiljon Kar's eyes had narrowed to hard slits. He became unnaturally calm. Then he sucked in a deep breath of air. With calm deliberation he reached the signal board, touched the keys according to the code. Prock eyed him stupidly, mumbled an almost incoherent question as to whom he was calling.

The door swung open after a moment. A slouching figure entered the room. Old Mardico observed the strained appearance of the two engineers and chewed his mouthful of weechie weed more vigorously.

Wiljon Kar's voice was a command. "You know of the space transport which is housed in the north storage warehouse? Call Zenor and Hals who are in the third dormitory and have them fuel it within an hour."

Mardico stopped chewing. His head reared up and his watery old eyes jogged in astonishment. As he spoke dribbles of his weechie weed stream down his chin.

"But X2⁹ isn't fit for flight. Not because she can't fire to Earth. That's why she's left here. She's a cockroach-infested pile of junk and you know it. It's true we're feeding Martian rockets as fast as we can build 'em, but if——"

"Get it ready at once." Wiljon Kar's voice was like a whip. "The X2⁹ is going out on its last flight. Mardico—we are all die."

Mardico returned the engineer's stare. Something new and heavy in the younger man's eyes told old Mardico that a strong man was neither dumb nor afraid. He grunted, looked at the control board and was gone.

Prock interrupted the junior engineer with more than petulance in his gaze. What happened to Wiljon Kar; some magnificent inner change had taken place which for the time raised him above the level of his fellow men. It was this same aura of strength, of aggressive will and fearlessness which caused Prock to say that he was ready, come what would.

"How much time have we?" Wiljon Kar broke into the older man's wonderment.

Prock studied the charts, frowned in thought. "You mean—until the web will have become a solid mass?"

"Yes—less the time necessary for the X2⁹ to reach Saturn?"

Prock stiffened, lifted his gnarled old hands in horror. "Not—not go to—to Saturn."

"Saturn or hell!" Wiljon Kar laughed softly. "There is scant difference."

Prock mumbled as he figured. "At the rate of energy massing in the web, I should say not much longer than thirty hours—perhaps less."

"We'll reckon with fifteen hours then." Wiljon Kar uttered calmly. "Fifteen hours the difference between life and death between universe-conquering man and [illegible] extinction."

"HMS REPORTING, sir," came the voice through the signal beam.

Wiljon Kar's features showed relief. [illegible] had ticked away since Mardico had left the control room. "You are ready then?"

"We have X2⁹ fueled to capacity. More than enough to drive her to Pluto if her worm-eaten ships will stand the strain."

Wiljon grunted grimly at this. "That is well, Hals. And what is the Venusite load?"

"Nine thousand pounds. We emptied the [illegible] Earth with the [illegible] She'll [illegible]"

Wiljon Kar's [illegible] "We're going at another angle, Hals. The X2⁹

is scheduled for Saturn. Be ready to leave in fifteen minutes."

The voice at the other end of the signal beam choked, coughed and at last sputtered: "To Saturn? Why, that's ten times the elongation of Earth—and it's—it's—great galaxies, Wiljon Kar, you're primed with rockets for sure!"

Wiljon Kar laughed, disconnected the signal beam and addressed the three dome maintainers of the second shift who were just reporting.

"Cardio," he said to the leader, "the fate of this dome city rests with you and but fifteen assistants—and there will be no relief shifts."

"I understand," Cardio replied calmly. "Everywhere it is said that the Saturnians are ravaging Earth. Also we have seen certain ones working with X29."

At the quarter-hour stroke Mardico battened the three outer ports of X29 and signaled to the transport's pilot chamber that the ship was ready to take off. Immediately he found his position on the acceleration absorber beside Zemor. Hals, Mardico and Prock assisted Wiljon Kar in the pilot's chamber.

The aerolock bubble exuded the heavy transport at Entrance No. 3. Through the swirling green gales of the [illegible] planet X29 hustled its great length, churning the thick cloud masses into even greater flurries as it drove through to space and beyond.

Faster and faster. The ancient beams creaked with the strain. Yet Wiljon Kar [illegible] maximum acceleration. [illegible] the red star which [illegible] the massive steel-gray hull. Its [illegible] became cherry-red [illegible] still be jolted in the [illegible].

[illegible] Prock was poring over the [illegible] charts. To their right was [illegible] straight ahead and ten times Earth's distance from the Sun was Saturn.

Wiljon Kar had called for an angular swerve. Prock looked mystified; nevertheless, he computed the desired result. Using these figures Wiljon Kar began a wide arc. The X29 was swerving to cut into the dark-purple conveyer rays at a point approximately midway between Earth and Saturn.

Time stretched to six, to eight, and now to ten hours. Again Wiljon Kar called for an angular calculation by which he might accurately pivot the madly charging ship. This time Prock mumbled and even Hals protested.

"Such an arc would swing us directly into the strange purple beams, sir. We'd hit the hull squarely."

"You, too, have studied the curious rays of artificial disintegration, I see," he murmured.

For the moment Wiljon Kar made no effort to answer. All his attention was directed to the swinging of the old ship upon this second arc. And still he held the fire-belching torps at maximum expulsion. Neither Prock nor Hals cared to ponder upon this, however. They remembered that the X29 had been pronounced unsafe for further travel. Any moment her worn torps might explode.

Abruptly Wiljon Kar interrupted their fearful reveries. "We are scarcely two hours—at this speed—from the purple beams. Hals, you join Mardico and Zemor below. You three will stand by the forward discharge tubes and be prepared to fire the entire load of Vermonite through them when I give the word. Mardico understands what is expected in this job."

Hals saluted, his colorless lips pinched together sharply. After all, it seemed this mad engineer did have some plan or other. They would die fighting.

A curious smile quavered momentarily upon Prock's mouth as he began to piece together the obvious maneuver contemplated by this determined junior engineer.

Wiljon Kar met the older man's gaze. "If the ship holds out," he said.

Prock nodded. His voice was a scarcely audible whisper: "If the ship holds out!"

WILJON-KAR plugged in the signal beam. "Mardico," he called, "are you ready?"

"Ready, sir," came the response. "We can empty a hundred tons of Venusite within an hour, I think."

"First charge set?"

"First charge is waiting, sir." Mardico's voice became high-pitched, ringing with real joy.

"When I give the word," Wiljon Kar counseled, "keep all three discharge tubes firing full blast. Empty every scrap of Venusite as fast as you can."

Mardico sang back: "Just say the word!"

Moments passed in gripping tenseness. Both Prock and Wiljon Kar were handling the controls now. Madly, desperately the X29 dashed across the arc, was straightening out now for the final perilous drive directly facing the mysterious conveyer beams.

Wiljon Kar's voice commanded: "Fire!"

A strange shudder wracked the speeding hulk as great waves of heat lapped at its space-pocked sides. In the pilot's chamber the two engineers gripped the ship's controls with strain-whitened hands. With his right hand holding down the power clutch Wiljon Kar still fed the torps a maximum of fuel.

Below, in the tube-discharge room, Mardico, Hals and Zenor sweated in furious rhythm as they shoved charge after charge of raw Venusite into the guns.

Click—slap! Click—slap! The snapping and firing of the tubes preceded like the timed explosions within the cylinders of a combustion motor. Venusite, its silvery sheen making it seem like so many logs of chromium, was poked into the gaping holes in a steady stream.

Prock tore at his clammy garments. Sweat was dripping from every pore; he gasped for breath. Wiljon Kar still hovered over the controls seeming not to mind the tormenting blasts of heat.

"It's getting worse." Prock slumped back in his seat. "I can't hold up under it. Man, it's making me alive. I'm cooked—scorched potsherd! Look at my flesh. I'm boiling in my own sweat."

Wiljon Kar hastily wiped an already damp sleeve across his face, yet his eyes never wavered from the instruments before him. Even as he spoke, his attention was held to the throbbing indicators.

"Hold out a while," he was saying. "It can't last much longer. Check Mardico. They should have shot forward a good fourth of our Venusite by this time."

Weakly Prock staggered to his feet. He moved drunkenly across the room. Heat waves scurried over him, making everything swirl crazily before his eyes. As soon as possible he stumbled back to his seat beside Wiljon Kar, dropped his head in his arms and panted for air.

"Mardico—says—load half gone—inside—another hour."

Wiljon Kar's expression was of indurate determination. "We can make it—don't mind the heat—it will soon—soon have to stop."

Prock was groaning as he breathed. Again and again Wiljon Kar checked the indicators, studied the controls, listened attentively to the weird shrieks of the X29's ancient support beams. The ship was still holding out. But how much longer? He wiped his steaming face; jerked back sharply from the touch of the handkerchief. His flesh was raw, blistered. He glanced toward the miserable old senior engineer. Prock's flesh was red and puffy as if it had been lashed with a billion microscopic whips.

Suddenly a tense thrill coursed

through the junior engineer's taut nerves. The indicators were changing. And, too, the X29 was slackening in its fierce forward lunge despite the fact that he was still feeding it a maximum flow of fuel. For a moment Wiljon Kar permitted himself to relax. He breathed deeply; laughed aloud.

The ship was cooling! The terrific onslaught of subcosmic rays had been checked. His plan was working.

Prock looked up wonderingly. The grin on Wiljon Kar's broad mouth was a most heartening sight. Too, the horribly suffocating heat seemed to be diminishing in its devilish intensity.

"Hear me, Prock?" Wiljon Kar's voice was firm with a fighter's glory. "Can you manage the controls?"

Prock straightened up as if challenged; reached toward the instruments. As Wiljon Kar got up Prock slid into his place.

"Hold the forward drive—hold it even in death!" Wiljon Kar's words rang into the senior engineer's still turned brain. "We're going to win, Prock. We've got to win."

Prock nodded stupidly at the instruments and indicators before him. "Got to win—got to win," he was mumbling without realizing what he was saying. It was all he could do to flay his tortured old body and brain into intelligent activity so that he might hold the X29 on her even drive, nose foremost down the path of the Saturnian's purple beams. But it was getting more bearable in here now. His head was clearing.

Wiljon Kar was in a space suit. He had gone below to the tube-discharge room, checked the work of the three. Fully half of the Venusite had been shot forth beyond the forward end of the ship.

"It's been the breath of hell herself spitting down upon us, sir," old Mardion had bawled out. "But we're outdeviling the devil himself, I says, sir. Just don't worry about us boys, Wiljon Kar. Just you and Prock keep this blasted ship all-at."

Beyond the pilot's chamber Wiljon Kar squirmed awkwardly along the ramp which led to the observation port. It was slow going in the heavy space suit; nevertheless, he hurried with a desperate enthusiasm pounding in his turbulent blood stream.

Atop the ship Wiljon Kar braced himself. The sight chilled him with its magnitude.

BEYOND the nose of the speeding X29 there spread a gigantic silvery cone. Vast and glistening with incalculable billions of energy units, the Venusite cone pointed ahead, its cavernous maw gulping in the approaching purple beams with their burdening charges of subcosmic energy.

Weakly Wiljon Kar staggered back, his eyes wide with wonder. The sight was more glorious than even his most intense dreams. From his position in the observation port it seemed that the great speeding cone of Venusite was stretching forth to engulf even the huge red star before it. Then he turned to look beyond the rear of the ship toward the faint glow of Earth.

The purple beams did not extend beyond the Venusite cone. Tears flowed freely from Wiljon Kar's eyes now. Earth was saved!

But he must not pause to philosophize, nor to drink in the glory of his own achievement. There was yet much to be done.

Prock looked up at his approach. "Three hours at this speed—maybe more for our momentum is no longer a constant. Also, Mardion has just reported that the Venusite supply will be exhausted in a very short while. What are your orders?"

Wiljon Kar gave the senior engineer a terse outline of the situation. Prock listened, no longer capable of being

amazed at the wonders this strange young man seemed able to perform.

Prock nodded in deep thought. "So the Venusite fired into the Saturnians' energy beams becomes flattened into a cone which absorbs the precious subcosmic forces. A brilliant thought! But listen, Wiljon Kar. Venusite does not absorb energy rays—all experiments prove it to be an absolute ray reflector. It—— By the spirals of Andromeda! The very energy the Saturnians planned to congeal around Earth is being reflected back upon Saturn itself! Incredible! Magnificent!"

"One hour more." Wiljon Kar's voice was an energetic whisper. "We dare not continue forward much longer, Prock."

The older man nodded, his nervous fingers trembling upon the instrument board. "Man survives," he murmured softly.

Wiljon Kar took over the controls, sending word by Prock for all to assemble in the pilot's chamber.

Silence pressed down upon them. Prock's bony forefinger tapped with the passing of time.

Suddenly Wiljon Kar stiffened in his seat. "Make ready!" he commanded.

The other four rushed for the acceleration absorbers. Wiljon Kar counted silently. Then swiftly he cut a side blast, sent the groaning ship off at a dangerously sharp angle. For moments it careened, wabbling with sickening uncertainty. Desperately Wiljon Kar fought with the controls, eased the tormented mechanism to a fixed orbit around Saturn.

"I'm going above," he said sharply. "You will watch the controls again, Prock."

Hals and Mardico donned space suits and followed his hasty climb up the ramp to the observation port.

The Venusite cone had disappeared. The X29 was riding serenely in space, slowly turning in its new orbit about Saturn.

"But the planet!" old Mardico bellowed into the radiophone. "It's—it's—by the shade of Einstein!—she's cooked to a frizzled omelet!"

They stared in hushed awe. Below them the red planet of Saturn seethed with the churning energy which had been thrust back upon it by the Venusite reflector. The surface seemed to flare with some strange cosmic fire which gathered energy as it seared the mysterious land.

Wiljon Kar's hands shook as he adjusted the telescope. He gasped! The entire surface of the planet was a churning, seething mass of fiery death. Matter was disintegrating and reforming before their eyes. All life which had been upon the sinister land was lost in the chaotic transformation of matter.

LATER—much later—Senior Engineer Prock was landing Wiljon Kar. "You are the savior of mankind. Soon we shall reach Earth—and a multitude of men are awaiting you to acclaim Wiljon Kar as the greatest of Earth's heroes—that is—if old X29 will stand the trip!"

Wiljon Kar made a move to silence the senior engineer's enthusiasm when old Mardico interposed his bell.

"And you're for not saying a word for us as wore our blooming gizzards to a frizzle shoving nine thousand tons of Venusite into those gal-blasted guns. That it, huh? Well, pickle your hide in Hades if you forget Hals, Zenor and old Mardico of the sweat brigade, says I."

"Tut, tut," Prock soothed. "Of course, you realize, Mardico, that every man of us is——"

"Don't 'tut' me," old Mardico sang out. "Just lead me to another tank of that blessed Martian rocket. Make it two tanks—one for me and one for the rest of you."

Twelve Eighty-Seven

Part Three of a great serial

by John Taine

UP TO NOW:

Jay Jarvis, at the age of 23, having made a fundamental extension of Mendeleieff's periodic law in chemistry, is about to sail for the enemy's country with his university friend Count Tori, commander in chief of the enemy's scientific staff, to join that staff. He hopes to discover the secret of the enemy's fertilizing "dust" which had quadrupled the fertility of the United States' agriculture, but which the President's emergency committee suspects of being a new war weapon.

At the boat Jay meets Tori's half sister Nora, who is half American, her father having been an envoy in the American navy. Nora is a young woman of great charm and high ability. She is an ardent pacifist and internationalist, thoroughly out of sympathy with Tori's ambitions of world supremacy for his race. Now she is going home, with her brother, after having organized and directed an extensive "youth movement" in Europe for international peace.

Tori confides to Jay that he likes his sister but hates her ideals. It comes out that the envoy who was Nora's father is now Admiral West of the President's committee. West idolizes his foreign daughter tremendously. She has never met West's American wife nor his children. Before sailing, Nora sees her father, who tells her to get well acquainted with Jay, thinking the latter could help her in her work for peace.

On the boat both Jay and Nora become fast friends. Nora declares her willingness to help Jay—up to a certain point—but she does not offer to betray her brother's scientific secrets because she is ignorant of them. According to her, Tori's staff is hopelessly stuck for want of a fundamental discovery they had hoped to make regarding the fertilizing dust. They expect Jay to make the discovery, and they put him to work at once in a laboratory on the boat. Jay's assistant, "Sam," one of the enemy, is an expert mathematician. Jay takes him for an obvious spy.

The day before they reach Tori's scientific island, Tori shows Jay that he suspects him of trying to communicate with the U. S. Secret Service, and Jay decides to abandon his supposedly spy-proof methods. The last night aboard he and Nora see a sky-filling glow from one of the dust factories on a barren island. Nora tells Jay they hope he will "extinguish the glow."

VIII.

THE NIGHT was stiflingly hot. Senator Atkinson and Secretary Redding were absorbed in the intricacies of a jigsaw puzzle. Two empty siphons and three depleted bottles of grape juice in an ice pail marked the senator's efforts to keep cool; Redding just sat and suffered under the glare of an electric light. The senator glanced up at the clock.

"Twelve thirty. What's keeping them? The conference was called for ten."

"Perhaps the President is in the john again. Hold on! I'm getting it." He



"What makes the greenhouses glow like that?" Jay asked. "The dust," Nara replied, and there was something ominous in the statement.

gingerly fitted a small triangular piece into the center of the puzzle. "Oh, shucks!" With a gesture of disgust he swept the puzzle into its box. "Washington crossing the Delaware."

"On a night like this?" the senator objected. "What has happened to the others?"

"Search me." Redding shrugged his shoulders. "Gloomy said he would be ready in half an hour, and that's over three hours ago."

The buzzer rang. Atkinson answered the telephone.

"What's that?" he snapped. "Russia, too? When did the note come?" He listened for a few seconds, then hung up. "Gloomy is coming right over from the White House."

"The President coming?"

"He's in the pool. Pumping the Russian ambassador dry.

"Seems to have got plenty out of him already. West will be a few minutes late. Something has turned up at the intelligence department. We are not to wait for him. Green probably won't be here."

"What's the matter with him?" Redding asked in surprise. "Heat?"

"Gloomy didn't say. It sounds bad to me."

Five minutes later Gloomy Winters entered alone, stuffing his collar and necktie into his pocket as he closed the door.

"What's that?" he demanded, spying the ice pail. "Grape juice? Are you mad?" He opened the door and shouted into the hallway. "Boy! Bring us something cool and substantial and plenty of it. You know my brand." He melted into a chair and refused to go on till the arrival of the refreshments.

"Good thing West isn't here," he began, after a refreshing drink. "I'll take up his case first."

"What do you mean?" Redding asked in surprise. "What has West been doing?"

"Making a damned fool of himself," Winters replied disgustedly. "Never saw the President so angry. Did he give West a dressing down? There's not a whole square inch of skin left on him. Then the Russian ambassador turned up with his comforting little note and the President slipped into the tank to cool off.

"Ever since then I've been trying to find out whether the army has any more political sense than the navy. Green should be able to tell us when he turns up. But first we've got to think up some way of muzzling West and keeping him from gossiping like an old woman."

While Redding and the senator listened in silent amazement, Winters relieved himself in short, jerky bursts of disgust at the story of West's incredible indiscretion. The admiral, it appeared, had proudly confided to the President what he considered his brilliant scheme for penetrating the enemy's defenses. When Count Tori called on West to convey the compliments of the elder statesmen of his courteous nation to the friendly American admiral, and to talk over the prospects of world peace and the good work of the League of Nations, he had taken along his sister to meet the distinguished American sailor.

The admiral admitted that he had been captivated by the girl's exotic beauty and her brilliant mind. Her grasp of world politics was both wider and firmer than that of her brother, and her cosmopolitan outlook took in a broader view of world affairs than was possibly to the count's narrow, intensely nationalistic outlook. In short, as Gloomy Winters put it, the admiral had fallen hard for the girl and bumped his head in falling.

Tori's sister, seeming to find a kindred intelligence in the admiral, had seemed reluctant to leave. The ad-

miral suggested that Count Tori leave his sister in his—the admiral's—hands while the count went about his urgent business. Tori graciously assented, remarking that his beloved sister could not possibly be in better hands. The admiral took her out to lunch.

Finding the girl an ardent pacifist and internationalist, the admiral saw in her an ideal ally for young Jarvis who, he had learned from Count Tori, would most probably accept a position on the scientific staff of which the count was the director. The admiral saw his chance. Although Jarvis had not yet been offered the position—much less accepted it—this was no time to leave any likely stone unturned.

Drawing on his prophetic imagination, and remembering Redding's "historical item"—the telegram from the elder Jarvis announcing the bankruptcy of the former fertilizer monopoly—the admiral astutely turned the stone. With incredible stupidity—according to Gloomy Winters—West had suggested to Tori's sister that she get acquainted with young Jarvis, should the latter accept her brother's generous and flattering offer, and talk as frankly with him as she had done with the admiral. She would find in him a kindred spirit, the admiral declared. The girl promised to be on the lookout for the young man and assured the admiral that she would be entirely frank with him.

ALL THIS had been detailed by the confiding admiral himself to the President just before the Russian ambassador arrived. It was then that the President blew up. Gloomy Winters added that until then he hadn't guessed that the President had it in him. What he said to West, and the shameful things he said of West's intelligence, would have made the Statue of Liberty blush. West's obstinate insistence that he would swear the girl was to be trusted, that she was a sincere pacifist and a confirmed internationalist—worth more than a whole fleet of battleships to the United States—only made the President worse.

"Don't you see?" the admiral shouted. "We needn't fire a shot. We shall sink them from the inside. That girl is more valuable to us than forty million Communists sabotaging the enemy's dust factories."

As the President, already suffering from the heat, showed alarming symptoms of apoplexy at this outburst of the admiral's, Gloomy had hustled him off to the pool. The admiral followed, still shouting.

"Wait till we get an answer from Jarvis to the wireless from our intelligence department," he roared. "Then you will see."

"See what?" Atkinson asked sarcastically, interrupting Gloomy's despairing account of the torrid interview.

"Guess what. Can you figure it? I can't. That innocent baby, West, really believed that the girl would offer to do young Jarvis' spying for him and find out all we want to know. Not as raw as that, of course. But she was to give him the pass-keys, and he would only have to unlock the doors. All as simple as that. He could use her as a go-between. Her rank, as Tori's sister, admits her anywhere.

"If she couldn't pry the necessary information out of her brother, she could go higher—or as high—in half a dozen directions. Some one would be bound to talk, and she could report to Jarvis. Then he and she could cook up some safe way of getting the information to us. Can you beat it?

"I shouldn't be surprised to hear any day now that young Jarvis has died of appendicitis. They will be well within their international rights if they shoot him as a spy. So the internationalism of West's girl friend will function, right enough, but not the way he planned."

Atkinson made an informal motion.

"We've got to shut him up before he begins broadcasting again. I move we recommend to the President that he, as West's superior officer ex officio, order West to hold his tongue."

"I second that," Redding spoke up.

"Too late," Gloomy demurred. "The cat's out. She's had kittens while our backs were turned. That reply to the intelligence department's wireless that West was shouting for came just after the President got the Russian ambassador into the pool. I'll read it to you. It seems the boy has arrived."

"When?" Atkinson asked.

"This morning—or last night. Figure it out for yourself. You know the difference in time between here and there. I never could remember whether you add or subtract, or what it does to the date line if you do. Anyhow, it's too damned hot for arithmetic. Jarvis is there. That's all that matters to us. Listen to what he says."

Winters fished a radiogram from his pocket and slowly read it aloud. It was from Jay, and it was addressed to the editor who had begged Jay to favor him with at least a full abstract of any discoveries he might make—including the all-important numerical tables.

According to an agreement with the intelligence department, the editor had telephoned the message in full to the secret-service officer in charge the moment it arrived. This was the message:

> REGRET I CANNOT COMPLY WITH YOUR REQUEST AS I AM ALREADY PLEDGED TO MY EMPLOYERS TO PUBLISH FIRST IN THEIR JOURNALS AND THEY CONSIDER IT IMPRACTICAL AND INEXPEDIENT FOR ME TO ATTEMPT TO WIRELESS YOU MY NUMERICAL TABLES STOP I AGREE
>
> JARVIS

"Plain enough," Atkinson remarked. "He is telling the intelligence department of the navy to mind its own business. His own plan is much simpler and safer, and he is going to stick to it."

"Is that all you make of it?" Gloomy snorted. "You optimists always see the bright side of everything."

"I'm no optimist," the senator retorted. "Young Jarvis is exactly where he was before the so-called intelligence department began messing things up. We shall be getting messages from him before the month is out. Want to bet?"

WINTERS did not take him up. Turning to Redding, he asked what the secretary of commerce made of Jay's refusal to cooperate with the naval experts.

"I'm no authority on codes," Redding began diffidently. "But my common sense tells me that young Jarvis has been trapped—or thinks he has—by that message the intelligence department sent him. For one thing, it was far too long and too detailed. I told you my objections when we discussed it before putting it on the air. Was it creditable that any editor of any scientific journal would have all that money to squander on negotiating with one of his authors? On the very face of it the suggestion was absurd. Whoever took that message off the air turned it over as a matter of course to some one who would be capable of elementary caution.

"I do not believe," he continued thoughtfully, "that young Jarvis has been compelled—as yet—to divulge his own scheme for communication with us. But I do most strongly believe that he will not be foolish enough to attempt putting his plan into action. The enemy is now aware that he is a suspicious character so far as they are concerned."

"Go on," Winters encouraged, when Redding hesitated diffidently. "You're not a rosy optimist." Seeing the sena-

tor's cognac beginning to bristle ominously. Winters hastily shoved a long, cold drink in his direction. "What were you going to say, Redding?"

"Only this: It is all speculation, of course, and it may lead to nothing, but, I think we should bear it in mind in any future plans we may make. I am assuming that the enemy now knows, or strongly suspects, what Jarvis is attempting to do. And I am also assuming that their intelligence department is at least as competent as our own. What will they do?

"The hint our department has given them is too strong to be ignored. They will act on it. How? By printing off a few separate copies of their Transactions' containing whatever Jarvis submits for publication. They will print what he submits, exactly as he submits it.

"Those are the copies he will see—strewn about the libraries and laboratories where he works. The others—those sent abroad—will not contain Jarvis' articles. Then they will set their best men onto Jarvis' work to see whether they can detect a code or anything else suspicious. Our whole scheme has fallen through."

"There is another possibility," Redding continued. "Jarvis himself, if he has as much intelligence as his record would seem to lead us to expect, may have had his suspicions aroused by our intelligence department's blunder, and he may put his employers off. Why should he attempt to publish anything if he suspects he is being watched as a possible spy?

"I know nothing of scientific research but from what I have picked up from Hawton and others at the bureau, it is quite the common thing for scientists to be too optimistic about their work. They are always going to get the job finished tomorrow, or next week, and then some unforeseen difficulty develops and holds them up for a year. Why shouldn't Jarvis keep stalling like that till he can get away?"

"He will, if he has any sense," Winters remarked grimly. "Otherwise, we are not likely to see him again."

Atkinson sat brooding in silence, his drink untouched.

"I begin to believe you two are right," he said at last. "Even a blind man could read between the lines of that message of his. He is telling us that he is in a tight fix and asking us for Heaven's sake to lay off. And I got him into it. Damn the luck!"

"He's not beaten," Redding remarked with quiet conviction. "If we can't pull him out, he can pull himself out."

"I hope so," Gloomy replied. "Green's outfit is seeing what they can do. Nothing, I expect."

The buzzer rang.

"That must be Green now," Redding, going to open the door. "Let him in, will you?"

General Green waved the proffered drink aside. "Not now, thanks. Well, our experts checked Winters' opinion. Young Jarvis has been turned inside out by some spy of theirs, and he is telling us not to attempt to communicate with him."

"Is any way?" Atkinson asked.

"Yes."

"Then his own scheme for getting the [illegible] data he wanted is out, eh?"

"For the present we advise against even that."

Redding had a disquieting thought. Were these the correct tactics of the [illegible] journal go into the foreign mails?

Green actually went pale. "We overlooked that," he admitted. "We must [illegible] at once. I shall see to it." He rose hurriedly to get through the necessary calls. "I don't want to rush you. It may take an hour to raise them at this time of night."

DURING Green's absence, Admiral West arrived. He was still smarting from the sting of the President's rebuke, but he had not lost his fighting spirit. Although his own intelligence department agreed with Green's, he would not admit his error.

"You're sunk," Winters remarked disgustedly. "Why not see if you remember how to swim?"

"I prefer to walk," the admiral retorted. "And I don't need any of your windshafters to keep my head above water. That boy, I tell you"—he was referring to Jay—"is not communicating with us because he no longer needs our help. I have put something better than a code into his hands."

"That intelligent girl of yours, for instance?" Winters suggested.

For a moment the admiral went white and speechless, and they feared he was about to blow up in a real rage. Recovering, he spoke calmly:

"That girl, I tell you, gentlemen, has more intelligence and more real brains than the lot of us put together. And I will stake my life against a plugged nickel that she is loyal to her ideals. Even though her whole nation goes insane and starts out to conquer the world, she will stand where she does now, on the side of common sense and common decency.

"I have nothing to be ashamed of and nothing to retract. [illegible] I take back anything I have said [illegible] to the President. As for communicating with young Jarvis, you will find that you can do so with ease and perfect safety, if and when it becomes necessary. That girl, as you call her, will [illegible] Jay, the present, I agree, Jarvis' message is a clear warning to us not to attempt to communicate with him in any way."

"Too late, I fear."

They turned, startled, to see General Green standing by the door, which Redding had forgotten to lock after admitting the admiral.

Green pulled up a chair and sat down. "The current issue of the biological journal was put in the foreign mails three days ago. The copies of interest to Jarvis were put aboard with the rest of the mail about two hours ago. There is an article by Davisson, MacMillan, and Speer in the issue. It is in Jarvis' code."

Redding sprang up. "Send a cutter after the mail steamer."

"Impossible—unless you want to declare war. It is an enemy ship."

Redding sat down. "That's that."

He glanced at the admiral, but said nothing. West made no comment. Gloomy took up the item of business for which the conference had been called in the first place.

"This is from the Canadian premier." He held up a telegram. "For our own information the premier states that Canada is entering on a full program of dusting this year. The first complete dusting of the agricultural provinces will be carried out at once, before any considerable snowfall can block the full and efficient action of the dust.

"The next will be in the spring, just after the snow melts. The premier informs us that the dusting of Manitoba was successfully completed today. The President asks us to discuss the probable effect of the complete dusting of agricultural Canada on our domestic and foreign markets."

Gloomy laid the telegram aside, and took up a sheet of yellow paper.

"This is my own memorandum of the President's conversation with the Russian ambassador. I jotted down these figures just before coming over here. They may not be exact, but they are substantially accurate, I believe. Russia also is entering on a full dusting program immediately. This, of course, includes Siberia. But it does not include the disputed territory of Manchuria

That, for the next two years, at least, is to be left in the virgin state—undusted.

"The enemy—if I may call our friends the dust merchants that—positively refuse to sell any dust for use in Manchuria. They contend that the unsettled political condition of Manchuria demands that it lie fallow for the present. The President is trying to learn what, if any, significance the omission of Manchuria from the Russian dusting program may have for our own situation.

"The Russian ambassador, apparently, sees nothing suspicious in this singular omission. We are asked to discuss this—and the whole Russian program—in conjunction with the Canadian. If nobody wants to hear the ambassador's statistical forecasts of next year's Russian crops I'll skip them.

"The President would like to have any conclusion we may reach by eight o'clock this morning." Winters glanced at the clock. "It is now three forty-five. I do not believe we need spend much time discussing the situation. Redding, what do you suggest?"

"An immediate suspension of our own dusting program."

"For how long?"

"The duration of the war—to put it that way."

WINTERS turned to West. "How does that strike you?"

"I pass," the admiral replied. "General Green is likely to be concerned. The navy will be out of it."

Winters nodded to Green. "What about it?"

"Quite dangerous, I should say. Even if we had troops enough, I doubt the wisdom of using them against our own people. The rice—especially in the farming area—can be counted upon to start within an hour of any proclamation that no further dusting will be performed."

"You have not voted," Winters reminded him.

"Very well," Green replied. "I vote with Redding."

"To suspend our dusting program?"

"Yes."

"You next, Atkinson. So far Redding and Green vote for suspension; West not voting."

"Although I am going to vote against them," the senator began, "I believe I understand why Green and Redding voted as they did. The exclusion of Manchuria from the Russian dusting program is something that I do not profess to understand. Nor, I believe, do Secretary Redding or General Green understand the meaning of this most singular—I would almost say sinister—exclusion.

"We all foresaw, in a vague sort of way, I suppose, that the enemy would sooner or later sell unlimited dust to Russia and Canada—our leading competitors for the foreign markets of our rapidly mounting surpluses. The enemy will obviously profit by the inevitable war of cutthroat competition. But this move on Manchuria was totally unforeseen. I can explain it to myself only by assuming that we have failed to grasp the enemy's strategy."

"That is why I voted as I did," Green cut in. "When you don't understand the enemy's strategy it is better to retreat in as good order as possible."

Redding nodded. "If we pull out now, instead of waiting to be forced out later when they shove the dust up beyond any price we can pay, we shall be that much ahead of complete disaster. We must get back on our own feet while we have legs to stand on. Five years hence—when the treaty expires—we should be so deeply involved that a rapid readjustment of our standards of living would be impossible without revolution.

"Now we face nothing worse than serious riots. There will be a bad de-

pression, of course. But we can survive it, as we shall be a market for the Canadian and Russian surpluses. Five years—or less—from now, there may be no surpluses available from Canada or Russia or anywhere else. By that time we shall have got over the worst of it. I say with Green—retreat while we can."

Atkinson agreed. "Exactly what I would say if I thought I understood what the enemy's strategy is. But I don't, although I fear it is something none of us has suspected.

"General Green anticipates trouble, and Secretary Redding half hints at a panic. I believe we shall have both on our heads within twenty-four hours if we suspend our dusting program. I have seen panics and revolutions, and I don't want to see another of either.

"My vote, therefore, is against suspension. That makes it two for suspension, one against. Mr. Winters, it is up to you."

"I vote with Atkinson," Winters decided instantly. "And I so vote because I feel we have not yet exhausted our resources of defense. I personally should like to see final action deferred until we have reasonable assurance that young Jarvis has failed. Then I shall at once change my vote in favor of suspension.

"As things stand, the vote is a tie. It is up to the President to decide. Redding, will you get him on the telephone?"

"Will he be up?"

"He told me to call him as soon as we had voted."

Redding was halfway to the telephone when Admiral West stopped him.

"Wait!" he said. "The President has had a hard day. If it is in order, I should like to withdraw my refusal to vote. What Mr. Winters said has changed my mind. May I vote?"

Winters nodded. "Go ahead."

"I vote not to suspend our dusting program."

"Three to two against." Winters got up with a prodigious yawn and stretched himself. "Lord help the man who gets me out of bed before sunbeam."

Atkinson turned to the admiral. "What made you switch your vote?"

"I didn't switch. I merely voted."

"Well, what made you do that?"

"Your eloquence, senator. Something you said reminded me of that girl."

"Bah!"

IX.

JAY'S refusal to "cooperate" with Admiral West's intelligence department was inspired indirectly by his talk with Nara. After seeing her to her stateroom, Jay returned to the bridge and sat down to think over what she had told him. The glow they had watched together was rapidly diminishing in the first hint of dawn, and, as it grew fainter, Jay quickly freed himself from Nara's romantic spell.

Had he said anything which could be used against him? Jay decided that he had been reasonably discreet. Still, Nara might gossip—innocently or maliciously. Jay had not yet made up his mind whether she was to be trusted with anything less secret than his name. He had told her nothing of importance, nor had he expressed any definite opinion on the rights or wrongs of the dust menace.

So far he had done pretty well. Then, with a nasty jolt, he recalled the incident of the radiogram from the editor. The effect of that would have to be undone. He hurried down to his own quarters to draft a suitable reply to be sent off at once.

Entering the laboratory, he found Sam dutifully waiting for him.

"Hello! I thought you were in bed."

"I was, Dr. Jarvis, but I have had

my sleep. Is there any work for me to do?"

"Nothing that I know of just now. Oh, you can wait a few minutes and take a message up to the wireless room for me. I want it to go out at once."

The reply to the editor was a matter of some delicacy to concoct, and Jay took his time. It must be a courteous refusal to publish in America and a sharp warning to the intelligence department not to attempt further communication with him. Three preliminary attempts to get what was necessary between the lines of the ostensible refusal were torn up and thrown into the wastebasket. The fourth seemed to be satisfactory, and Jay typed a copy for the wireless operator. It was this message which so upset West and the others.

"Here, Sam, take this up and ask the operator to send it out immediately. I'm going to bed. If I am not up, call me half an hour before we get into port."

He began emptying his pockets onto the table—a package of cigarettes, a lighter, and his watch. Yawning, he followed Sam into the sitting room.

"Hurry!"

Sam hustled, and Jay passed into his bedroom, slamming the heavy door after him. In forty seconds he was in his pajamas, ready for bed. But he did not climb in.

To reach his own sleeping quarters, Sam had to pass back through the sitting room. Jay waited till he heard the outer door of the sitting room open, when he cautiously turned the handle of his bedroom door. Giving Sam time enough to cross the sitting room, Jay opened the door a crack. He saw Sam sneaking into the laboratory.

Jay tiptoed across the sitting room and opened the laboratory door, which Sam had closed behind him. Sam—as Jay had expected—was busily fishing the scraps of Jay's discarded attempts out of the wastebasket. Jay let him fish. When Sam had the lot in his hand, Jay walked in.

"I forgot my watch. Cleaning up before you turn in?"

"Yes, Dr. Jarvis." Sam smiled expansively. "I like to do my cleaning up at night."

"So do I. Good night, and don't forget about calling me."

Jay did not tell Sam that he had carefully prepared the discards for Tori's edification. By this simple trick he confirmed what he had suspected from the first: Sam was more than a first-rate mathematical hack; he was not half so engagingly green as he looked.

Their relations would continue precisely as before; but Jay felt relieved to know that Sam, after all, had more talent as a mathematician than as a spy. No competent spy would have blundered into so elementary a booby trap as that which had caught poor, simple Sam. Jay slept soundly till Sam called him.

The engines stopped just as Jay finished dressing.

"See that all my junk gets ashore," he called to Sam. "I'm going up on deck."

Nara greeted him near the gangplank. "You missed your breakfast. I'll bet."

"That's not all I missed. Last night I missed my watch."

"Oh, did you find it?"

"Sure! I mislaid it on purpose." He gave her a meaning look. "Sam helped me to find it."

Nara looked startled. "I see," she said. "Here comes my brother." She hailed him. "Poor Jay has had no breakfast."

"Neither have I." Tori admitted. For once he actually laughed. "Have you told him our plans?"

"I was leaving that to you."

Tori explained that he and Nara would be delighted if Jay would be their guest for as long as he cared to stay at

their house. "My house, I had perhaps better say, as Nara is there only when she is home, which is not often—with her trips to Europe and America, to say nothing of out-of-way parts of her own country."

Jay protested that he would put them to too much trouble; he could easily find comfortable quarters at a hotel, and, anyway, he would be in his laboratory most of the time.

Then he caught Nara's signal. She was fingering her wrist watch and looking him straight in the eyes. It might have been a mere coincidence, but he thought not. Should he chance the spies in Tori's household or try his luck with those at a hotel? Probably it was fifty-fifty, and Nara would be better company than anything he was likely to meet at a hotel.

Holding his breath for a moment, he let go a delicately poetical acceptance in Tori's own language. They were both delighted, for he really had got it off rather well.

"Sam has taught you a lot in so short a time!" Nara exclaimed, clapping her hands.

"He has," Jay agreed, and he saw that she understood. "I wouldn't trade that boy up for his weight in platinum."

AS they walked down the gangplank, Tori explained that the last was to continue its cruise, as only government officials connected with the dust industry were permitted to land on this particular island. For the first time Jay noticed that they three and Sam were the only ones getting off the boat. Scores of curious tourists hung over the side, eying him enviously.

They all knew who Count Tori was; most of the men had tried to get a dance with his beautiful sister. Now they evidently mistook Jay for some one of extraordinary importance traveling incognito. Jay grinned up at them and ironically lifted his hat in farewell.

"Well," said Nara, "'we are here,' as Pershing remarked to Lafayette. Let me telephone out to the house so they will have breakfast ready when we get there."

She hurried off to the tiny waiting room at the far end of the pier. Tori and Jay followed slowly, and Sam dashed after Nara, evidently to do some telephoning of his own. In the excitement of getting ashore, Jay had not properly taken in all of Tori's remarks. One came back to him now.

"Why did they let me land? I'm not a government official."

"But you are connected through your fundamental science with the dust industry," Tori explained.

It was the first time Tori had come out with his real object in engaging Jay. Jay did not exactly like his employer's frankness. It made him feel like a slave. The little man suddenly stiffened and became pompously formal.

"And I now have the honor to inform you that my master, graciously confirming my recommendation, has conferred upon you the rank of commander in the scientific division."

Jay was over-me. What was the correct thing to do on such an occasion? Embrace the donor? Shake hands? Salute? Being unable to decide, he nodded his head and grunted something that meant nothing at all.

Tori seemed satisfied and continued his remarks. Although everything was phrased in the politest language, Tori let Jay infer that he was now virtually a prisoner and that Tori was his jailer.

The long and the short of what Tori decently veiled in the equivocations of diplomatic verbiage was simply this: Jay was on the island now and he would get off when it should please Tori to let him go. All those engaged in scientific work on the island were in the same fix. In work such as they were engaged, Tori explained, secrecy was essential, and one of the safest ways

of insuring secrecy was to remove all possible temptations to chatter before outsiders.

The island was in no sense a jail or a penal colony; indeed it was one of the most beautiful and most salubrious spots on earth. Nor were the workers being detained against their will. Not one of them, Tori declared, would dream of stepping aboard any boat sent specially to take him off. One and all were intensely happy to be there and to be doing their work in perfect freedom, for they knew that they were working for the highest possible goal, namely, the good of their country.

Tori permitted himself to express the hope in passing that Jay would become so enamored of the life that he would apply for citizenship in the great nation which Jay's fellow workers were serving so loyally, so unselfishly, and so gladly.

To set Jay's mind at ease, Tori assured him that he, being an American citizen, would of course be permitted to leave whenever he chose. But, Tori added, he did not anticipate that Jay would want to leave for quite a time.

Jay agreed. He felt sure the place and the work would suit him perfectly. While Tori was talking, Jay had been interestedly scanning the ocean. No land was visible on the horizon, but six huge battleships, fuming slowly by, relieved the monotony of the cheerless gray expanse.

"On patrol?"

Tori nodded. "We cannot take the risk of a sudden raid on our laboratories by agents of an unfriendly competitor."

In the far distance Jay made out a long procession of about two hundred ships swiftly plowing north.

"The fleet?"

"Not exactly. That is the first flying squadron of the dust transport."

"Bound for the United States, I suppose?"

"No; Canada. I ordered the consignment for the last of the autumn dusting forward yesterday. The snows have already begun to fall in the more northerly sections."

"I didn't know Canada was going in for dusting on a large scale."

"Total. Russia also."

"Business must be booming."

"It is," Tori agreed. "And it will break all records when your fellow workers take their next step forward. By the way, will your preliminary report be ready for communication to our physics club? It holds its weekly meeting tomorrow afternoon at four."

"I doubt it. Several unexpected snags have stopped me in mid-stream."

"There is no hurry. Take your time. Yours is fundamental work, and if you try to hurry you will only become nervous and be unable to go on."

Nara joined them. "Breakfast will be ready when we get there."

"Fine!" said Jay. "How did you manage to get ashore?"

"What do you mean?"

"According to your brother, only government officials connected with the dust industry are allowed to land here. What's your official job?"

"Being the one exception." She laughed.

"Yes," Tori spoke up with an unpleasant inflection, "she talked the highest authorities into letting her come here—when she is not too busy elsewhere—to take care of me. She said my health needed her sisterly supervision."

"It does," Nara insisted quietly. "For one thing you work far too hard unless I am around to distract you."

Tori was about to vent some petulant reply, when Nara caused a diversion by flagging the family chauffeur.

"Here's the car."

THEY hurried in and were rapidly whisked away from the shore toward the heavily timbered mountains. Pres-

only they began to climb, and soon they were whirling along a well-paved road to the side of a towering mountain terrace.

Jay, absorbed in his new surroundings, paid but scant attention to the excited exclamations of his companions as they recognized familiar landmarks. Of course Tori seems to have inherited the burdens of imperialism on his well-inspected shoulders. Somewhat to his surprise, Jay discovered that the would-be empire builder could lose himself in oratorical ecstasy over the brilliant hues of the dwarf mountain maples.

The entire pass through which they sped had been artfully landscaped to achieve wonderful beauty than that of nature itself. Their speed slackened, and the car glided out into a small plateau. Glancing back toward the ocean, Jay was startled to see the red and white of a square cross inclosed in a circle showing here and there through the treetops on the long slope toward the water.

"Hospitals?" he asked Tori.

"Hospitals and rest homes."

"But why the Red Cross trade-mark painted all over their roofs? This doesn't look like a military area."

"You forget the cruising range of modern bombers," Tori reminded him.

"But who——" Jay began.

"That is not for me to suspect. However, I need only remind you that one of the nations with which we are on the friendliest terms at present has a large naval base about a thousand miles from this island. We trust, to their friendship for us to note the red crosses and to observe the conventions of civilized warfare—should they be tempted to bomb our scientific establishments from the air."

"Civilized warfare!" Nara broke in contemptuously. "Those helpless casualties in the wards will be the first to be gassed!" She turned on her brother with something like exasperated fury. "Why don't you come to your senses and realize that you are living in the twentieth century and not the sixteenth? If you really want to protect your casualties you will forget all your silly ideas of chivalry and have those red crosses painted over with green tomorrow. Camouflage the roofs, instead of making targets of them that even a cripple lay of seventeen on his first raid could not help hitting. I really believe you want your casualties cleared out of the way."

She stopped abruptly, almost panting with contempt for her smug brother. Her outburst—possibly because it had occurred before Jay—moved him to a show of anger, and he rapped out a staccato reprimand in his own language.

Nara only smiled contemptuously. Then, waiting till she had cooled off, she flung at him two short sentences, neither of which Jay could understand. Their tone, however, was plain enough. Tori was speechless. Recovering his self-control, he turned to Jay.

"I must apologize for our behavior. Please think nothing of it—neither of us would dream of breaking the sacred obligations of hospitality by making a guest uncomfortable. It was just one of our little brotherly-sisterly arguments."

"Sure!" said Jay. "I was always arguing with my sisters. We never meant anything by it. But you spoke of casualties. What put them on the sick list?"

"Overwork," Tori informed him curtly.

"Then I wouldn't worry." Jay laughed.

Nara had been following their conversation critically. She now picked up the speaking tube and gave the driver a sharp order. Tori eyed her coldly, but did not interfere. The car slackened speed and made a U turn. The red crosses came into view again, and



"Tuberculosis?" Jay whispered. Nara shook her head. "The staff calls it overwork. So don't overwork, Jay."

The car turned down a side road through the forest directly toward the hospitals.

"Perhaps Jay would prefer breakfast before visiting the hospitals," Tani suggested in his usual even voice.

"This is not to be a tour of inspection," Nara retorted. "He need see only what overwork does in its first stages. It may be enough to warn him not to work too hard. Some other day he can see what happens to those who disregard the first warnings of common sense."

The car stopped before one of the larger buildings.

"A rest-cure home," Nara informed him. "Everything that is humanly possible has been done to give the place an air of peaceful quiet." She indi-

cated the trailing flowers in hanging baskets along the airy veranda. "Even the flowers have been carefully chosen—delicate blues and lavenders. The chairs would invite even the most energetic to sit down and rest or sleep. Notice the subdued harmony of the colors and the softness of the matting."

They climbed up the easy steps to the broad veranda.

"Now," she said, "see how perfectly the patients harmonize with the furniture." She called their attention to the landscaping in front of the building. "That, too, is part of the cure. The patients melt into it."

Jay looked at the listless men sitting or lying in easy cane chairs down the length of the cool, shady porch. The eyes of most were closed; a few gazed listlessly out over the soft contours of the shrubbery to the dark, emerald green of the stunted firs in the background.

"Tuberculosis?" Jay whispered.

Nara shook her head. "The staff calls it overwork." She glanced challengingly at her brother. "The men from the Central College of Medicine have no name for it. They say it is like pernicious anaemia in its first stages. These men are all in the first stage." She lowered her voice. "The man with white hair in the third chair from the end—on your left—is passing into the second stage. There is no cure."

Jay studied the face of the third man from the left. The man's eyes were closed, but he was not asleep, as he was carrying on a steady conversation in a husky monotone with the man on his right. At a first glance there was no marked difference between this patient and the others. On studying his face more closely, however, Jay noted that the skin had a peculiar transparent appearance, as if the flesh beneath was translucent yellow wax or tallow. Nara led them back to the car.

"Don't overwork," she said to Jay as he took his seat beside her.

Tori seemed slightly put out. He minimized what they had seen.

"There will be nothing like this when we learn how to take the next step forward. And it cannot be long delayed now."

JAY could not help wondering whether Tori was expecting him to take the next step. It was growing increasingly clear that the scientific division of the dust industry did not know exactly what it was doing.

Nara interjected an ironical comment: "There is no victory without casualties."

Tori, being insensitive to irony, eagerly seconded her: "No; and these men are as truly sacrificing their lives to their country as if they had fallen on the field of battle." He sighed profoundly. "They will be hard to replace. It is always the best and the bravest who fall."

Nara shot Tori a glance which he missed. She seemed about to speak, but changed her mind. Her brother was hopeless. As the car drew up in front of a concrete-and-steel bungalow almost completely covered with flowering vines, she gave her brother a parting shot.

"After all," she said, "I believe you are right in having the red cross painted on the hospital roofs."

"Of course," Tori agreed eagerly. He thought Nara had recovered her common sense.

Her next remark undeceived him.

"Yes," she said. "It would be much better for those men to be gassed or blown to bits than to sit there dreading the second stage and then having to go through with it." She darted into the house. "You show Jay to his rooms. I'll only be a minute."

If Jay had expected to find Tori and his sister living in something charm-

ingly native, he was soon disillusioned. The long, rambling house was modern and scientific to the last detail. Only the solitary picture—a small masterpiece—on the wall of the sitting room made him aware that he was in a foreign country.

The massive thickness of the walls and the huge arched girders of the ceilings instantly caught his curious attention. Although he had never seen the inside of a bombproof shelter, he imagined that such a place must be constructed like this singular dwelling house. Having waved me into a chair to join his hosts in the breakfast room, which Tori had ordered without consulting Nara, she was busily arranging three white roses in a slender vase on the table, gayly chatting with her brother as she did so. Their recent trip seemed to have been forgotten—possibly by a mutual agreement to behave in a civilized manner before their guest.

"You see," she directed Jay, "I'm sure Tori will be here in a moment with the orange juice. You see," she said, laughing, "we shall have a real American breakfast as a housewarming. For lunch I have ordered something more quite to that."

Jay ventured a rather delicate question as he took his seat. "Is there a red cross painted on the roof of this block?"

Tori, as usual, took him seriously.

"No," he replied. "To mark this with the red cross would be in violation of the Geneva code, and, besides, the use of the device is only for hospitals."

Nara hastened to reassure their guest. "You needn't be alarmed. The house is bombproof and can be made shipshape in three minutes by closing the electrically operated steel shutters. If there should ever be an attack"—she smiled—"which I'm sure there won't, I would rather be in her a specially protected shelter than trapped in Tori under a six-teenth of an inch of white-and-red paint. Here's the orange juice."

"Nara is right about the improbability of a raid," Tori said. "But we should be guilty of criminal folly to neglect any precaution for any possible contingency, no matter how remote."

"You bet!" said Jay.

X.

THE FIRST three weeks of Jay's work on the island passed pleasantly enough. Tori and Nara appeared to have agreed on an armistice, certainly they had no more rows in Jay's presence, and they had themselves out to make his stay in their bombproof bungalow comfortable. They never intruded on his privacy, but always seemed glad to see him at breakfast and dinner, or when he dropped into their sitting room on the way to his own quarters.

After the first week, Jay took his lunches at the clubhouse with the rest of the scientific staff, so he saw his hosts together only in the morning and evenings. As Tori seemed to be overwhelmed with work, Nara and Jay frequently dined together alone.

On such occasions Nara talked without restraint of her work for internationalism and peace. She also was extremely busy, and Jay soon learned that Nara was no parlor pacifist expounding in a vacuum. And as he came to appreciate in some degree the magnitude and the intricate ramifications of the vast movements which she directed with all the skill of a seasoned strategist, his respect for her rose.

From [illegible] statistics over the dinner table, their conversation [illegible] on a more serious level, and they discussed impersonal things when Tori was absent. Over her coffee cup one night Nara never alluded to her work or to world politics. Possibly this was part of their

working agreement for keeping peace in the household, for poor Tom always grew restless and irritated when Jay inadvertently made some remark touching the field of Nara's interests.

Jay found himself gradually believing in her; she was what she professed to be and nothing else. And then, naturally enough, considering the nature of his own work, he wondered whether he could use her.

He rather despised himself for these practical speculations, but salved his conscience by remembering that all is fair in love and war. Jay was not in love, and Nara was too busy to encourage him in anything less serious.

At the lunches, Jay soon made friends among the scientific staff—after the ice had been broken by his own frankness about his work. At first they were inclined to treat him with formal courtesy. That phase soon passed, and Jay was accepted as one of them. Some of the older men even went out of their way to be friendly. More than once Jay suspected them of wishing to confide in him.

Something seemed to be troubling them, but they could never quite bring themselves to the point of speaking out what was in their minds. Possibly, he thought, they wished to warn him of impending danger. As Jay had already seen plenty in the laboratories to make his blood run cold when he speculated on the possibilities, their outspoken warning was not needed.

Contrasted with scientific workers of other nations, these sober seekers of factual truth were a queer lot. Deadly earnest in everything they did, they seldom smiled, and a laugh or a joke was beyond them. Unlike the men Jay had known—personally and by reputation—these scientists played no games. Cards or their equivalent were unknown in the clubhouse. A tennis court had not been even imagined. At lunch, instead of the usual joking and gossiping, these men talked incessantly of their work and of what their fellow scientists the world over were doing. They seemed to have read all the current journals, and to have more than a talking knowledge of what was going on elsewhere.

Jay marveled that their digestions could stand the strain. It began to get on his nerves. One day his neighbor at the lunch table gravely asked Jay what he thought of a profound mathematical paper on spectrum analysis that had come to the physics library the day before. At the moment Jay was trying to get the meat out of a crab leg. He let out something halfway between a sob and a yell of despair and replied that he had not yet had time to look at the article and doubted whether he ever would. His neighbor went gravely on with his own shellfish and between mouthfuls insisted on giving Jay a detailed, critical review of the article in question.

"How do you do it?" Jay asked in wilted wonder.

"Do what?" the meek little reviewer asked.

"Put fish in and take mathematics out at the same time. My own stomach is all upset, and I've only been listening."

"But I do not take the mathematics out of my stomach," the man protested.

"Then where do you get all that stuff you've been throwing up?"

Probably the earnest little man did not quite follow the colloquial English. Anyhow, his reply was disconcertingly grave.

"From my soul," he said.

"Heaven have mercy on mine!" Jay muttered under his breath.

The next day he picked a less serious-looking companion. But it proved to be a false move. The new man spoke no English, but was fluent in a bizarre sort of pidgin German which he had acquired as a student in Berlin.

Jay's German was unequal to the ter-

rific strain of translating the hashed gutturals into sensible visual images, and all he got out of that lunch was a bowl of soup and a confused memory of leaky vacuum pumps battling valiantly against a barbarous horde of cracked condensers.

AT THE BEGINNING of the fourth week Jay began to sense the first stealthy advance of the overwhelming depression which was presently to haunt him like a waking nightmare. One day a kindly older man whom Jay had grown to like appeared to be in perfect health. The next, he crept into lunch, pale and listless. The following day he was absent. To Jay's inquiries the missing man's friends replied with a shrug and the curt explanation "overwork." Evidently it was the accepted formula, officially imposed. When Jay asked whether his friend would be back, they said that he would, as soon as he had "rested."

"Is it the first stage?" Jay asked.

His question was politely ignored. To a young man fully conscious that he was alive and healthy, the experience was profoundly disturbing. These fanatics—in his secret thoughts Jay rather brutally lumped them all under one head; although many obviously were there under compulsion—these devoted truth-seekers might be willing to lay down their lives for the continued prosperity of their country, without a murmur of protest, but Jay was not.

Unless he could get out of it with his health intact he would kick himself for a fool for having blundered into it in the cocksure assurance of youth. At the moment he would have gladly exchanged all his prospects of ever discovering the secret of the dust for a guarantee that he would never be compelled to take a "rest cure."

But there he was, and there he must stick till his wits could get him out of it. There was nothing to be done but to grind at his job and forget about "overwork." But he made a secret vow not to look in a mirror again; he could shave by touch.

During the first week his fellow workers had left him to do exactly as he pleased. Then began a subtle pressure on him to hasten his work. They said nothing definite, but the casual allusions to the "fundamental" character of the dissertation which had made Jay notorious—if not exactly famous—gradually became more frequent. Then others dropped hints about their own inability to get over the last hurdle in their own work which the lack of one simple, fundamental fact prevented them from clearing.

Jay's extension of the periodic law, they declared, had almost helped them over the last obstacle, but not quite. Was he still working in the same general direction? Could they be of any assistance to him? Perhaps Seventeen—Sam, for short—was too slow for Jay? When were they to have the honor and the pleasure of listening to Jay's preliminary report, of which Count Tori had given them such glowing accounts?

Jay replied shortly that he couldn't say, as the whole investigation had gone sour on him. Privately he resolved to keep stalling them off till the last possible moment, when further stalling would only arouse their active hostility. Behind all this constant, gentle pressure, Jay imagined he detected the strong arm of his friend Tori. Well, let him keep on shaving a little longer; Jay was just beginning to feel at home. The final shave came sooner than he had anticipated. It nearly sent him sprawling on his face.

On the Tuesday morning of his fourth week on the island, Jay went early to his study in the main library building. Neither Tori nor Nara had appeared at breakfast; Tori was sleeping late after working all night, and

Nara had left very early to drive over for a visit to some old friends on the other side of the island. Consequently there was no temptation to linger over the last cup of coffee. Entering his combined laboratory and study, Jay found the industrious Sam already at work.

"Go and fetch me whatever new journals came in yesterday afternoon. I don't feel like working yet, and I'll just browse around a bit."

Sam returned in a few minutes with a small armful.

"The American mail arrived yesterday," he said, dumping the lot on Jay's desk. "There are some new French and German ones, too."

"Thanks, Sam." Jay ran his eyes over the pile, taking in the familiar backs of the periodicals. He glanced up at Sam. "Don't you ever take an hour off?"

"No, Commander Jarvis."

"Commander? Haven't I told you not to make a monkey out of me? I'll help you to remember by commanding you to go now and take a long walk. Don't come back till lunch time."

"Yes, comm—I mean Dr. Jarvis."

"Beat it, before I send you walking for a week."

Jay got up and locked the door after Sam. Then he dived into the pile and grabbed the biological review in which Davisson, MacMillan, and Spier were to have attempted to communicate with him. He devoutly hoped that they had tried nothing so risky. Had the intelligence department correctly interpreted his message to their "cooperating editor"? One glance at the back cover of the journal was enough.

"Stuck!"

THEN he grew angry, not with himself, but with the secret service for having been so stupid—as he mistakenly imagined—as to misinterpret his patently obvious request to them to lay off him altogether. How could they have been so blind? Calming down, he searched the journal for some definite clue to its actual date of printing. He found what he wanted in the notations left by the printers at the foot of the inside back cover. By a little arithmetic he soon deduced that his message might well have been too late by a margin of a few hours.

"Gosh, I hope it was! If not, they keep on sending me bales of stuff for Tori to read."

He turned to the article by the three biologists. There it was. The title gave it away to Jay's guilty eyes; the three had followed his suggestions to the letter.

"After all this fuss I hope they have managed to get something of value through to me."

They had—or at least they thought they had. The code which Jay had given them was imprinted on his memory for life—he had never trusted it to paper after telegraphing it to Senator Atkinson from Chicago. He now turned to the first tabulated list of measurements in the faked paper. The eleventh, twelfth, eighteenth, and twentieth measurements had the digits *7,9,3,8* as the next to the last. This being the agreed "signature" 7938, Jay knew that the biologists were sending him the information he had requested. To get it, he had now only to read the eleventh, twelfth, eighteenth, and twentieth terminal digits. This gave the number 1280.

"Twelve eighty?" he repeated aloud incredulously. "Why, they're crazy! He hurled the journal across the room and jumped up, tipping over his chair with a crash. "Crazy as loons!"

Some one was rapping at the door.

"Come in!" he shouted, forgetting in his excitement that the door was locked. Seeing the handle turn he remembered. Striding to the door, he flung it open. "What do you want?

Oh, excuse me, Tori. I thought it was that pest Sam come back again. Come in. I missed you at breakfast this morning."

Tori rubbed his hand across his forehead. "I worked all last night and I'm feeling rather off. You are overworking, too"—he missed the startled look on Jay's face—"and I thought we might clear our heads by taking a spin through the woods in an open car. What do you say if we drive over to the other side and pay Nara a surprise visit? We can get there in time for lunch with her friends. I know they will be delighted to meet you. Come on!"

"Fine!" said Jay. "Are you driving?"

"I don't feel up to it, so I brought the chauffeur."

"Better and better. I myself don't feel like driving this morning."

Tori started. He peered for a moment into Jay's face. "You are just tired and nervous—like me."

While they were talking, Jay was fully aware that Tori was observing the overturned chair and the disordered litter of journals on the desk. As they passed out, Tori's casual glance took in the biological journal where Jay had flung it. He said nothing, but Jay knew, as positively as if Tori himself had told him, that he owed this friendly call to the good offices of the pestiferous Sam.

That faithful spy, no doubt, had hurried over to report in full to Tori the moment Jay threw him out of the study—to get rid of him, as he fondly thought. Now Tori knew exactly what journal it was that Jay had wished to read in privacy, away from the prying attentions of the solicitous Sam.

Jay could have kicked himself for a careless fool, but it was too late now to do any good. He could only speculate on Tori's next move and trust that his own friends in America would send him no more messages. Otherwise, he had a strong premonition that he might soon work himself into a "rest cure." Why the devil hadn't he picked up the telltale biological journal and put it with the others before opening the door? Oh, what a fool he had been! In this frame of mind he silently climbed into the back seat of the car with Tori and resigned himself to a pleasant drive through the crisp morning air.

Nara was indeed surprised to see them. Whether she was also delighted, Jay could not decide. Her friends were an elderly couple and their son, an assistant to one of the key men in the scientific division. The young man looked about Sam's age.

The family had the use of a small cottage on the seashore. They were enjoying a brief vacation. The son, it appeared, had not been feeling very well of late, and his chief considerately let him off to go fishing. He had been far out early that morning; his catch was to be the main course at lunch.

The old people were evidently of peasant or fisher stock. Both were now attached to the scientific division in humble capacities, the wife as a filing clerk and the husband as clerk in charge of one of the storerooms for chemical supplies.

When Tori and Jay arrived they heard sounds of animated talk issuing from the flimsy little cottage; after they appeared the talk dried up. The old folks were friendly enough. Their welcome to their unexpected visitors was as gravely courteous as the traditions of their race demanded, but it could not have been called effusive. Jay wondered whether he and Tori had interrupted one of the energetic Nara's conferences.

THE SON had a certain dogged look about the eyes, as if he was not entirely satisfied with his lot in life. His expression when he looked at Nara—without her knowledge—was one of ab-

solute devotion. It was the sort of look a private might give the commanding officer in whom he has implicit trust. There was not a hint of love or sentimentality in the young man's glances. Jay set him down as likely to be a cool, rather dangerous, customer in a scrap, and he wondered what the four had been discussing so spiritedly when he and Tori interrupted them.

Tori greeted the young man affectionately. Jay learned that his official name was "Five." Tori used no other.

"Well, Five, how is the fishing?"

The query was spoken in the vernacular. To his surprise and delight, Jay found that he followed the meaning perfectly, thanks to Sam's efficient instruction and his own attentiveness at the lunch table. Venturing a remark himself, he asked the young man in his own language whether he had caught any crabs.

Nara was listening. She clapped her hands. "Fine! I couldn't have done better myself."

She gave the young man a rapid instruction which Jay could not follow. Speaking very slowly and distinctly, the fisherman replied that he had caught exactly five crabs about an hour before Jay arrived, which was only right, as his name was Five. It was the first time Jay had ever heard one of these people attempt anything but a deadly serious statement of fact.

"Keep after him, Nara," he said, "and in time he will crack a real joke."

"You don't know these people as they really are. By themselves, doing the things they really like to do, and not strutting around with toy swords, they are as happy and jovial as any people on earth." Seeing that her observations had irritated her brother, she quickly changed the subject.

"Shall we take a stroll down to the beach before lunch?"

"I'm on," said Jay.

Tori and the others declined. The parents said they would stay behind to put the lunch on the table, and Five evidently wished to talk with Tori. As they strolled off, Jay heard Tori congratulating Five that his indisposition was not serious enough to demand a real "rest cure."

"Who are they?" Jay asked when they were safely out of earshot.

"Just old friends," Nara replied lightly. "They go back to work tomorrow."

"Internationalists?"

Nara evaded the direct question. "They are not very keen for all that sort of thing," she said, indicating two of the battle-ship patrol steaming slowly by, far out to sea. "Nor is the son anxious to be forced to take a 'rest cure.'"

"I see. It must be very difficult to know whom to trust in your kind of work."

"It is, very! But what about your own work?"

"How do you mean?"

"You are finding it hard to know whom to trust."

"Oh, I don't know."

"Would you confide in me, for instance?" she asked.

"What have I to confide? Everything is going along smoothly. I'm doing the job I came here to do. That's all there is to it."

She gave him a searching look. "You are upset about something. Did anything happen this morning?"

"Nothing out of the usual."

"Then why are you so down?"

"I may as well tell you. Seeing those poor devils at the rest home the day I arrived gave me more of a jolt than I realized at the time. This morning your brother gave me an unintended jab that made me feel pretty sick for a minute or two."

"What did he say?"

"It was just a slip. He meant nothing by it, I'm sure."

"But what was it?" she persisted.

"Well, he said I looked overworked. You know what they mean by that around here."

She stopped abruptly. "Stand still. Turn your face away from the sun and let me see." She scrutinized his face closely. "You are all right," she said. "But keep away from the high-voltage buildings."

"I shall—as long as I can. Is that where most of them tire of their jobs?"

"There and in the biological buildings—the laboratories and the greenhouses."

Jay was startled. "The biological buildings? I didn't know they were doing any biological work here."

"They are. A lot. Some of my friends on my brother's staff say it is the most important of all the work being done here."

"But I've seen no hint of it," Jay protested. "Of course the principal biological journals are lying about in the main library, but that means nothing. Any modern scientific library subscribes to all the main lines as a matter of course."

"Perhaps we can drive back past some of the laboratories this afternoon," Nara suggested. "Then you can see for yourself."

"What are they working on?" Jay demanded coolly.

Nara laughed. "Are we exchanging confidences?"

"Tell you in a moment. You first."

"Very well. I have been told—by our agents, of course, not by my brother—that the main work is bound up with tests of the improved dust they are making all the time on seeds and young plants."

"Is that all? Don't they experiment with flies at all?"

She regarded him quizzically. "It's your turn now. How is your work progressing?"

"Not so fast. My preliminary report seems further off than ever."

"Good boy!" she murmured. "I see I did make some impression on you that night on the bridge."

"No, honestly, Nara, I'm not stalling. I'm stuck."

She scanned his face critically. "I believe you," she said. "Can I help?"

JAY THOUGHT FAST. The code message, with its "1280," had completely upset his preconceived notions concerning the dust. After the first shock he realized that however unexpected the biologists' 1280 was, it was not impossible. To test a theory which was beginning to crystallize out of his doubts, he must perform the experiment of Davisson, MacMillan, and Spier, no matter how crudely, by himself.

Unskilled as he was in the proper technique, he yet felt that he could do a good-enough job to see whether they had missed the mark by anything of the order of 500. Although he had expected a number less than 2000—the theoretical limit of his scale—he had anticipated nothing like 1280.

"You could help me," he said.

"How? Tell me; and if it is possible, I'll do it."

"This may sound rather queer." He laughed. "But I hate to go singing small potatoes to your brother." Seeing that she missed the slang, he explained as formally as if he were lecturing. "It is simply this: I came here fully expecting to extend my work on the periodic law. Your brother is growing impatient—he says nothing, but I know how he feels. I can't blame him. He has been telling the staff for a month that I am ready to report. I have not reported.

"This morning, most unexpectedly, I learned something that has caused me to modify the assumptions on which I was working—radically. What I have

done will not be thrown away or wasted. But it must all be checked over again from a new angle. To do this, I shall need a sample of the latest improved dust. It must be the very latest form they have made—any other would be useless for my check. Can you get it for me? I could ask your brother, of course, but I should hate to have to admit that my work is not going as well as I hoped."

"Have you told me everything?" Nara asked quietly.

"No. But I am asking your help. You offered it, you know."

"Tell me just one thing more: Will it be necessary for you to work in the biological laboratories?"

"I don't know. Why?"

"They furnish most of the casualties."

"Then I'll keep out of them if I can."

"And the high-voltage rooms, too, if you can, where they generate the hardest X rays. I have warned you about them already."

"I know. Can you get me that sample of the dust? A mere pinch would do—less than half a teaspoonful. But it must be the latest."

Nara did not commit herself, and Jay could not make out whether she agreed.

"It would be very difficult," she said.

They heard a faint shout behind them, and turned to see Tori hailing them. It was lunch time.

"You two must like exercise," he said when they joined him. "Not for me."

"It would do you good to take a walk with Nara once in a while," Jay remarked. "I feel all bucked up."

"You forget that she is my sister," Tori responded gloomily.

"Then take some other fellow's sister for a walk. It's what you need."

The lunch passed off quite gayly. Nara behaved herself and even let her brother lecture Five on the stability of the work he was doing for the good of his country. After lunch Nara begged Five to show her his crab-fishing outfit. To see it, she had to accompany him to the little shack behind the cottage. When she returned she proposed that they—Tori, Jay, and herself—return together. She could drive, and let the chauffeur take her own car back. Tori readily agreed.

"I am going back the long way," she said. "It's going to be such a beautiful evening."

By this simple subterfuge, Jay was taken on a personally conducted tour by moonlight through the parks surrounding the miles of glass houses and the imposing biological laboratories. Poor Tori, exhausted by his sleepless night and weeks of hard work, slept most of the way. They did not rouse him to view the laboratories.

"Do you notice anything about those greenhouses?" Nara asked in a low tone as they sped by one of the experimental stations.

"What makes them glow like that, as if they were lighted up by sodium vapor?"

"The dust. The glow is the same kind as that we saw from the steamer. Have you found out yet what causes it?"

"No; and I'm not likely to."

To be continued





Brain Leeches

by Edward S. Mund

FOR MONTHS astronomers had been watching a strangely behaving heavenly body, a free planet wandering in space. Schatz of Germany had discovered it, and almost immediately Suyaki of Japan and Derringer of California had seen it driving through space at a terrific pace. Slowly, however, it began to change direction. It was passing through the planetary system between the fifth and sixth planets. Moving forward, it began to turn inward as if attracted by the pull of the Sun. More slowly it turned in toward

the path of Mars, slowing down as it came.

At first it attracted little enough attention, until the sensational *Free Press* of New York touched off the match that set the Earth into commotion with its scare-headlines: "DR. VEBLEN SAYS EARTH IN NEW PLANET'S PATH." Within twenty-four hours every paper in America and Europe carried the story. The Earth was doomed! The mob went mad.

"How long?" they asked. "How long before it smashes us to bits?"

The big cities were wild with disorder and—with prayer. Overnight membership in churches jumped ten, fifty, one hundred percent and more.

Temporary lull—again the *Free Press* scooped its competitors. "EARTH MAY BE SAVED; MARS NEARLY IN NEW PLANET'S PATH." But the prayer did not cease. Now there was something to pray for. Hours of anxious watching. Every radio in America was going twenty-four hours a day. People sat by their sets hour after hour hoping for the news flash that would mean death or life. Nearer and nearer to Mars it came. No one slept by night. City parks and the tops of tall buildings were crowded with people, out to see the catastrophe in the skies.

Once more the weeping and wailing. Mars was safe—the planet had passed it unharmed. Nights of high debauch were followed by days of dull despair—anything to kill the fear or to forget it, if only for an hour—a minute.

Slowly the planet came on until it entered the gravitational pull of Earth. On and on it came until it was in the orbit of the Moon, a second great light in the November nights, reflecting as it did from its icy surface, the lights of the Sun.

Foretaste of death came for the people of Earth. Terrific storms rushed over the Earth's surface and tidal waves came pouring into the shores with terrific speed and height. One wave completely engulfed the low-lying lands on either side of the English channel, but who cared for the thousands who died? They were saved from the final catastrophe.

Ranier burst forth into fiery activity, blackening Seattle and Tacoma with a hail of fire and ashes, building up a new cone two thousand feet higher than the old one. Lower and lower came the planet, nearer and nearer to the surface of Earth—one hundred and fifty thousand miles away, one hundred and thirty thousand miles. Frenzied people climbed high buildings to watch, and jumped off in despair. Spiraling down as it was, the new planet twelve hundred miles in diameter was calculated to hit Earth in the center of the North American continent. People fled from their homes. Seattle and New York were crowded with people willing to face the dangers of tidal waves to reach Europe and the Orient, anything to get away from the doomed American continent.

Growing hope. On it came, but more slowly now. It might, probably would miss Earth altogether. At the end of another week, it had passed nearly parallel to Earth, dropping inward only five thousand miles more, and slowing up until its pace was scarcely more than that of the Moon.

Certainty! It had stopped its downward descent altogether. It was fixed in an orbit around the Earth 121,964 miles away. The Earth had gained another satellite.

IT WAS an icy satellite, until the Sun had done its work well. Slowly, the glinting surface changed and astronomers were able to say that our new moon, Aqua Luna as it was called, was mostly one vast sea with a few mountain peaks emerging above it, and one high table-land rising above the water near its newly determined equator.

Probably had there not been such

dense fog rising from the surface of the melting ice, the inhabitants of Earth might have been warned of what was coming—but there was no warning until it was almost upon them.

Nearly six months after Aqua Luna had established itself, Jenson called Oslo from his laboratory in the far North of Norway to say there was a huge, queerly behaving asteroid approaching Earth. As it struck the Earth blanket at about seven in the evening, he said, it had begun to glow—he had seen it first because of the glow and because his telescope had, by chance, been trained directly on it.

Almost immediately the glow had gone out, as if the asteroid had spontaneously checked its speed, and he was able to follow it after that by the reflected light of the Sun; for it was still out of the Earth's shadow. And it was moving more slowly, as if under the control of thinking beings. He guessed its speed was little more than four hundred miles an hour, and its distance above the Earth at about three hundred miles. It was traveling in the direction of the American continent.

Immediately the news was wirelessed to the world, and all over America people were out in the open, watching for the strange visitor in the skies. At about eight thirty in the evening it passed over New York City, nine hours after it was first seen in Norway. It was scarcely ten miles up, and along its sides were rows of lights—a huge dirigible three thousand feet long. By that time there could be no doubt that some sort of thinking beings were maneuvering it.

Westward it passed. By nine thirty, Chicago time, it was over that city, dropping slowly and easily toward Earth. At Chicago, planes rose to get a nearer view. It was then only a few thousand feet up, and going slightly northward, toward Minneapolis. Three planes were racing it until the first was but a few hundred feet from the monster.

Over the radios of Earth came nothing but news of the visitor.

Flash from Bronson's plane. "Watch out Lebio—dirigible hostile—just destroyed Hanely's plane. A flash in the air, and his big Silorsky went up in smoke. Be prepared, Minneapolis—— Dirigible coming that way—dropping farther behind to avoid Hanely's fate —— Signing off."

That was the message Jack Thornton and I, who had been driving down to Minneapolis from the North woods, unaware of the approach of the monster, heard as we turned on our automobile radio. From that time on we did nothing but watch the skies. A half hour later we saw it.

"Heavens," breathed Jack in awe as he first saw the huge ship slowly settling down off to our right. "That's not from Earth."

THE HUGE SHIP came gently to rest just south of Anoka. There were no searing blasts of rocket motors to break the fall, no noise; but the ground under it smoked for a moment, and then became hard, dry, and as we found later, cold. Onto this surface the huge monster dropped without a bump—as if a feather were to come to rest on a cement sidewalk.

Thoughtless fools that we were, we got out of our car and started to run across the quarter mile that separated us from the metal ship. The darkness prevented our being seen. When we were about two hundred feet away, to our amazement, a whole section of the side swung silently out to form a perfect incline down which one might walk to the ground. Now, we thought, we were to see what sort of being these visitors were.

Our amazement grew as out of the ship came, not people, but a dozen small ships which began to circle the mother

ship at a distance of a quarter mile. Round and round they went, sending out a small sheet of spray which hardened at once. Each sheet went round, added a layer and another and another, drawing it in until the whole of the great ship was inclosed by this thin, transparent covering with only an opening at one end, an opening large enough to permit the parent ship to pass out.

"What now?" cried Jack. "Caught like rats in a trap. Come on, let's make a break for the open end."

Perspiration stood out on me. I was weak in the knees—and I had always thought I was brave. With feet weighing more at every step, we started, but to try to break out into the open we now saw was useless, for already other machines had come out and taken up their positions at each side of the opening. Detectors, we guessed, to warn the ship's inhabitants should any one try to enter.

At that moment, for the first time we became aware once more of the outside world, not by sound so much as by the blinding flare of a bomber's searchlight, for we could see through the covering as if it were not there. On came the bomber which chanced to be at Wold Chamberlain field for the night. We could see the two huge bombs which it must have hastily picked up at the airport arsenal. In a second it also became obvious that the pilot was unaware of the covering so hastily put up over the visitor from space and reaching nearly a quarter mile up. The plane crashed. There was obviously a tremendous explosion which we could hear faintly through the open end of the covering, and the bomber was blown to bits—but the covering remained unharmed, as rigid as ever.

Now, for the first time, we saw the occupants of this huge dirigible. As we saw them we shivered violently; it was as if something loathsome were near us. Strange they were—though at first we thought them beings like ourselves, only smaller, weaker, but human, nevertheless. And then we saw the great bulbous masses that seemed to be clinging like a filmy cape over their shoulders; not quite filmy either, for it was opaque, loathsome, and revolting, like some great mass of brains held in a translucent rubberlike sack. But for the sack, however, the things were normal; that is, they were normal according to our standards of normality.

They came out of the opening to examine this world so new to them. As they came nearer, our feeling of revulsion grew. These monarchs of the air as we thought them should have been gorgeously arrayed in all the finery and splendor, accompanied with all the regal pomp of oriental kings—and they were in rags. They wore nothing above the waist and only tattered rags suspended from a belt below. And then, when they were halfway to us, we saw them for what they were.

"Good night," whispered Jack. "What are they? They look like leeches, brain -leeches, parasites feeding on human bodies."

That moment of discovery was almost more revolting than the moment when we ourselves became slaves of the monsters in the rubberlike sacks. Huge fungouslike growths they were, with long slender tentacles, four of them fastened into the beings who seemed human. Two of the tentacles were shoved deep into the flesh under each collar bone. And there were two huge staring, multilens eyes rolling horribly in either end of the pulpy mass.

OUT they came, straight toward us, making queer, outlandish sounds. We flattened ourselves against the ground, but there was no escape. One of the humanlike beings saw us first and shouted. "Van-Va-" but his speech was strangled in mid-cry, for the bulbous creature on his shoulder saw us, and the man he was riding, as if acting against

his will, pulled from a holster at his side a type of stick gun, pointed it at us, and we were frozen to the spot; no movement was possible.

Our brains alone were left perfectly clear, but it would have been better for us if they too had been paralyzed. We were surrounded, picked up, and carried into the belly of the huge ship.

Within it was a perfect garden spot although we got little enough pleasure from its beauty. In the center was the place for the smaller ships, but beyond ran long levels of land which were well planted with strange and lush-growing plants. In one division there were even a few strange-looking animals feeding. At a glance we could see that here were complete, the materials to support life.

And then the horrible process began. We were placed on tables and one of the hosts with his parasitic burden lay down beside me. Slowly, as I watched from the corner of my eye, he withdrew one tentacle from his former host and ran it round my neck. The loathsomeness of it! It was as if some snake, cold and slimy were coiling round my neck. And I couldn't even shudder. I was cold, and clammy perspiration rolled down my face. The sharp point of the tentacle felt its way into my very flesh, deeper and deeper, and I had not so much as the power to groan. But there was no pain. It was as if some soothing anaesthetic preceded it.

For a time nothing more happened. He seemed to be waiting, testing me to find whether or not I would support him. After what seemed like hours, movement began again, and in rapid succession the second, third and fourth tentacles were withdrawn from their former host and sought their way into my flesh. Then a fifth—which I had not seen before and could not see now—slowly, delicately even, as if testing each millimeter of its way, sank itself slowly into the base of my neck, into the very brain itself. That completed I was released from the frozen condition by means of an injection of some sort shot into the vein of my arm by one of the other creatures standing near by.

I saw Jack then and he too had his burden. I tried to speak to him, but my host controlled me. I found my voice making strange sounds which were yet perfectly intelligible to me, for I seemed to be working with the creature's brain as well as my own. It was more as if our two brains were working together with his directing mine in the way it should go. I turned toward one of the others and seemed to be speaking.

"O great one, this is better than we could hope. This is a perfect host. If only there are others like him, we shall indeed be fortunate for we can again cast our spores, multiply, and continue our work of subduing the universe. This one has better blood than our poor weak ones, but I find his brain only indifferently developed—perhaps it is as well, for we shall have no attempted revolts."

"It is even so, O great one," said Jack, as he too turned toward one of the creatures, evidently their ruler, who held apart from the rest.

"Seek of the slave," said the one addressed, "where we can most readily find others of his kind."

I started to think to myself, "I'll be damned if I do," but I found myself saying: "Any of the theaters would be a good place, O great one."

"Guide us there."

I had no choice. I wasn't master of the smallest movement. I walked into one of the small ships with Jack and a half dozen others. One sat himself at the controls and the ship glided off without effort. Out the opening, straight toward the city. I found myself talking, giving directions, pointing out a theater. Again the ship began the process of circling, spraying out the liquid that hardened to an impenetrable covering. Only a small opening was left and this

the ship blocked as it came to rest in the street.

As I left the ship I could see the latest car appearance had brought. There was a deserted trolley car in the middle of the block. In their haste to escape the ship, three cars had smashed into each other at the crossing and a man lay stretched out on the street. I saw them down a man came out through a glass door which snapped shut behind him. He saw us and took to his heels.

Into the theater we walked, each with his paralyzer gun. A few people were coming out. I shall never forget the horror on their faces as they saw us, but it was short-lived for they were frozen as we had been before them. Inside the theater, the leader turned the nozzle at the end of his gun, seemed to click it once, and there was no more motion except for the dazzling flicker of the picture running on the screen. One by one, the people were picked up, carried out and stacked in the small ship, stacked as if they were cordwood.

Only the man in the projection booth had escaped. Now, as the man ahead of me was carrying his limp burden, the operator appeared, gun [illegible] and shot him. In a second [illegible] was paralyzed as [illegible] of parasite from [illegible] once more in the theater lobby.

BACK at the [illegible] people were taken into the main hold and twenty-two of them received their parasites without delay. The whole company of parasite brains now had new hosts. This done, the whole company of original hosts were lined up and frozen, except as I found later, the paralyzing process never affected speech. We heard snatches of their speech as we were hurried out. Again the ships were in motion, weaving back and forth in front of the great open door. Soon it too was closed and we all came back.

"I think now," said the leader, "we may take an extra rest for a very short time. Paralyze your slaves, although you may leave them free to talk if they will. They must learn that I [illegible] from the old ones and what we expect from them."

I felt a slight stinging sensation at the back of the neck, and I could no longer [illegible] not so much as lift my finger. I found myself near a very beautiful young girl.

"I wonder," I thought, "if I can talk to her." But I was not long left in doubt, for she spoke to me, and I understood her perfectly.

"I'm so sorry for you," she said. "These monsters will give you little rest."

"But where do you come from?" asked. It was easier to talk than to think.

"Long, long ago," she said, "we were a happy people on the planet Analph that circled around the sun Horan. One day a ship from outer space appeared. Now I tell you what happened? We were subjected as your people will be, for this was the ship that came, and we were treated as you have been. We were paralyzed and when we were released found that our people who had been captured had a parasite brain on his neck [illegible] hosts were lined up and disintegrated. Of course, that happened many, many generations before I was born. I forget how long many it was.

"We tried to fight, but what can a paralyzed person do? It has been a fight of the mind, and we've never been a match for them, though the struggle has greatly increased our mental ability."

"And then, the catastrophe occurred. That was in my great, great grandfather's time, nearly nineteen cycles ago." I later learned an cycle was the equivalent of about ninety years, and that the catastrophe she referred to must have been what we, sixty years ago, in 1935, recognized as the bursting of the Nova in Hercules.

that sun burst and our whole planet was driven off at a terrific rate of speed. The only thing that saved any of us was that the twenty-four fungi brains that we had were in the ship in its metallic covering, a protection like the one that we just had around them.

That gave us time to prepare heat from the mass below, and we never would have suffered from the terrific cold of outer space. Of course, we should have left the planet at once but we were on the outside and the resistance was too great. The ship could not rise against it. Then, too, all the water in the outer atmosphere fell against our covering and froze. We were prisoners in a huge ice cave until a short time ago when we entered near Sun's orbit and the ice again melted.

"That's all I——"

Click.

Again I could walk, but I had no use of my own will. I was hurried outside the ship to see the most magnificent bombardment man has ever seen. The air fleets of America and Canada had gathered to do battle with the monster and were raining down bombs of terrific destructive force on the metallo-cellulose covering. As I neared the doorway, I saw one of the new electromagnetic bombs burst against the foundation of our covering. It threw up monstrous masses of earth, but shook the covering not at all. It did open up a passage underneath, and the noise came through with a burst that almost deafened my ears.

Hastily one of the small ships was manned at the unspoken command of the master and the liquid was sprayed over the hole—again the noise was shut out. But the air fleet had learned its lesson. Now it aimed at the ground at the edge of the covering. Bomb after bomb showered down at the edge. The din was terrific. Slowly the covering was bending, sinking down into the great pits made by the explosives. I would gladly have suffered destruction myself, if only these monsters could be crushed.

But that was not to be, at least not yet. I was directed by my parasite to a small gun which I picked up, aimed at the huge Delphin Zeppelin, flagship of the American fleet, hovering directly over the casing. I pulled the trigger and the monster ship burst into flame—the casing remained whole! That gun, even today—six years later—our experts have been unable to analyze. A few of them still work, but what it is that comes out we do not know.

ONE BY ONE, others of us, at the command of our parasite brains, armed ourselves with these guns. In twenty minutes the last of our countrymen brave enough to attack lay in the midst of the smoking airships. All was quiet once more, and the little ships went about repairing the damage. Our country was dumped to pass into the worst kind of slavery.

And then began the most horrible process of all. There was a council meeting at which the master spoke.

"It seems best to me," he said, "that we should stay within our shelter for a little time longer until we can have produced more of our kind. Zolar, yours has long been considered the best brain among us. You may spawn two hundred times, for we have at least that many of these Earth people, as they call themselves, with us."

Zolar, on his hunt, went into the chamber into which the men and women taken from the theater had been placed, still paralyzed. The rest of us followed.

As I watched, small round, sickly-looking masses of fungi flesh began to push out from his brain covering. One by one, his hunt picked them off, placing each one at the neck of a captive Earthman. Almost immediately the first

feeler appeared and sank itself into the brain cavity of the new host. As we watched, the side tentacles grew, coiled around the neck, and sank themselves beneath the collar bone and toward the heart and lungs of the victim.

Slowly, slowly, the brain mass began to pulsate, to throb with the pains of growing while the last remained frozen. One by one, the two hundred were treated in the same manner.

"Quick," commanded the master, "pour the prepared foods down their throats."

I, with others, hurried to great bottles filled with a greenish, gray, gelatinous substance. These we poured into the mouths of the hosts.

"Let us see now," said the master, "if the young ones have the host under control yet. Inject this one with the life liquid."

All watched as one of the new lines was treated as I had been earlier. I watched the struggle in the man as he tried to move, but it was useless.

"It is well," said the master. "Free the others." And the others, though freed from paralysis, were still unable to move.

"That will do," said the master. "In a short time the offspring of Zohar will be ready, and then we will subdue the people to our uses. Let us again take our period of rest."

Again I felt the paralyzing sting in the back of the neck, and again I was powerless to move. By lucky chance I was once more beside the girl.

"What is your name?" I asked her.

"Norla," she replied, "of the tribe of Han."

"And have you had to bear one of these monsters all your life?"

"No," she replied. "I've not had to bear my burden for long. I am still, by our time measurements, very young. I had just reached maturity as the ice cap began to melt from our dome, and it was then that I was given my father's burden. He was killed to help renew the fertility of the soil in our ship."

"When we grow too old they destroy us as if we were the disease germs they destroyed after the ice cap settled over our ship."

"You have no diseases?" I asked.

"We've had none since just after our planet was driven off into space. Now we rarely die except by accident; but when we grow too old we are hunted out. They have allowed us to reproduce in just enough numbers to keep them supplied—and they always keep ten more in the prison, in the event of accident to any of us, though they guide us so well no accidents except old age have ever happened."

"Can we do nothing?" I asked.

"Nothing," she said. "We have tried. We have strived to develop our minds beyond theirs, and in this we've gone forward, for since we have to do their bidding, we learn by doing. And too, slowly, you will find that through the tentacle attached to your brain there will be some involuntary communication with your own, for they have never dared to paralyze our bodies above the neck vertebrae. They once tried to paralyze our brain too, but that left them unable to work with us since they must send their commands through our brain channels."

"But how do they manage it?" I asked.

"From that tentacle at the base of your skull," she replied, "they can, at will, run out dozens of small, hairlike fibers to the various brain centers. They know your very thoughts while you think them. They attach themselves to the motor nerves, and when they rest they coil them tightly about each motor nerve going below the neck, emitting from the fiber a constant flow of mild anaesthetic which makes action impos-

sible. Even if that were to fail, the four tentacles in the chest would soon stop the heart or keep the air from the lungs."

"But wouldn't they die if they did that?" I asked.

"The host would die," she replied, "but the parasite would merely transfer himself to another host, or, if there wasn't another handy, two would get along temporarily with one host."

"Let's find something more pleasant to talk about," I said. "You are very pretty, Norla. The people of your own tribe must love you."

"Love?" she laughed, and her laugh was bitter. "It is a strange word. We are not permitted to love. We are mated to produce the most satisfactory hosts. Only the most rugged, and those with the reddest blood are allowed to reproduce. Have you not noticed we all resemble each other closely? It was found that the people of my family and those of the rulers of the tribe of Set were the best."

AND it was true; they were alike—and they were flawless in their beauty: perfectly formed bodies, bodies in rags and slightly emaciated from their long service, but beautiful still. Their faces were of the type that, in their perfection, we should have called classic Greek. And the skin—it was flawless in texture.

I raised my hand to touch her arm.

Only her eyes could show her surprise. "How did you do that?" she cried. "You are under Raccok's control, and yet you move! Your other hand; try that too."

I tried to raise the other hand. It was free!

"Quick," she cried. "Pull out the tentacle at the base of your skull—quick, now, before he wakes."

With one movement I grasped it and pulled it out. A great mass of sodden grayish flesh came with it. He awoke, Raccok, my master, but he could no longer control me, nor could he use my voice to warn the others. But in spite of the ooze mass I had pulled from his center he still had control of the other tentacles. I felt them clutching at my throat, shutting off the air, clutching at my heart—— The pain was intolerable, and I fought like a man possessed. One, two three, I ripped the tentacles out and much flesh with them. Hanging by its last tentacle, the pulpy brain mass fell in front of me. The last one gave way and I was free. That freedom was as precious to me in that moment as if I had always been a slave of the brain monster.

"Quick!" cried Norla again. "No chance like this have we had—ever—— Those guns—there by the wall—the paralysis ray—turn it on the others. They fall before it, too."

Exultation surging through my body, I jumped to do Norla's bidding. Two of the monsters with their hosts I sprayed, but the others were coming to life.

"Spread wide the nozzle," shouted Norla. "Set up a paralysis screen between you and them."

I obeyed.

"Are they safe?" I cried. "Can I free you?"

"We have no time now," she said, and her eyes were bright, "but don't bother about me—us—now. The spawn next. It won't take them long to take up where the others left off. You must beat them. Take new guns. Spray the whole chamber and then come back."

As I entered the chamber, the whole host was moving, coming toward the door. Already the spawn were two thirds the size of the parents, but they were unarmed, and I stopped them with two prolonged discharges from my guns.

"Now that rack, there," said Norla, as I came back. "Those syringes; inject

into my arm up to the first mark on the barrel—we must work fast for the beasts don't stay under the influence as long as mental men do."

As the liquid entered her veins she moved.

"Free," she exclaimed, "free at last—the first of my race to be free in generations. Now the others here—free them, too."

Feverishly we worked until there were twenty-five of us moving, working; and then we attacked the brain monsters. One by one we pulled them from the necks of their hosts, freeing the hosts from the paralysis as we went. A horrible mass of the brain stuff was squirming on the floor, flinging out tentacles, trying to draw themselves toward us, for they were coming out from the paralysis.

"Keep them in one place," warned Norla, "for they'll spawn and all must be destroyed—all—all!" Her cry was almost hysterical.

As we finished on the parents we ran to the growing progeny. They joined their parents in the squirming mass.

"Now the disintegrator guns," called Norla, still in command. Already the little globules were being pushed fast from the parent mass. "Not one must escape to form a cyst," said Norla, "for unless all are destroyed, the whole fight might have to be done again."

We turned the searing flash of the disintegrators on the mass of brain matter, and it disappeared like prairie grass before a wind-driven fire. We scorched the floor all about over the whole chamber, and everything that was not mineral disappeared. Even the top crust of the metal floor disappeared. Not till then was Norla satisfied.

THAT was the end of the world's greatest battle, unspectacular as it had been, the fight for the freedom of the human race. Only now, six years after, are we beginning to appreciate to the full, the value of what came near being the death of the human race. We learned many things, and I do not regret my foolhardiness of that night. In the first place, by being a slave for nearly twelve hours, unconsciously my brain learned the language, and many of the secrets of the fungus brain.

We learned the secret of the covering so hastily put over the ship and our fast-disappearing forests and mines were saved from destruction for building purposes. Our first project was to build huge shelters into which all people were placed and then, through them, waves of great frequency were passed destroying all parasitic forms of life. Disease became a thing of the past.

We learned, too, that the secret of their heat and propulsion came from the breaking up of the atom; we learned how to break up the atom ourselves. These were but two of the greatest things we learned.

The animal and plant life in the big ship provided us with new varieties of food. Life was made easier and less laborious by the ease with which building could be done; no longer would it take years to put a dam like the Boulder Dam across a river. All that was needed was a ship well supplied with the liquid metal-cellulose and a permanent structure could be built up in a few hours. The appearance of Aqua Luna was the greatest benefit ever conferred on man.

One thing, however, we never did learn: why I was able to escape from the control of the monster. Perhaps it was that the abundance of cold germs then in my system from a cold just coming on temporarily paralyzed my parasite brain so long free from all disease germs. Perhaps it was merely that his fifth tentacle had not yet firmly attached itself to control all my activity. The one certainty was that I escaped.



Knorahl's features were benign. He started to speak again —but at that instant the man out of time grew dim and vanished.

The Far Way

by David R. Daniels

IT WAS DARK in the hall when Stuart finished his work and started out of the building. He was interested in physics, and the experiment had taken the whole afternoon. As he started out the door things seemed to whirl before his eyes. It surprised him; nothing like that had ever happened before. Perhaps he had been working too hard, he thought, as he straightened his big shoulders and strode on out.

Then he noticed something peculiar

There was a thin new Moon in the west, with a bright planet beside it. He stared at the sight a moment uncomprehendingly. Something was wrong, yet what it was he couldn't make out.

It was at a time of evening when few people were abroad, so Stuart went several blocks before he met any one. Finally he passed a person heading in the opposite direction. The man stared at him curiously, halted, turned and spoke: "Say, isn't that Stuart?"

"Yes," he replied, puzzled. The voice seemed familiar, but there was a strange ring to it. Like the voice of a friend might sound after an absence of months. "But you aren't Peterson?"

"Surely, Bill. Where have you been this last year? There certainly was a hue and cry when you left so suddenly, just at graduation, and right when that will turned up. Where have you been, anyway?"

"I don't know what you're talking about," said Stuart. "When is this?"

"It's August 27th, of course. Year, 1937. When did you think it was?"

But Stuart didn't answer at once; he was too dumfounded. That was what was wrong with the evening. There was a new Moon, when it had been fairly full. Nor should there be an evening star. August 27th, 1937! A moment ago it had been July in 1936. Somewhere between the time he had finished work and met Peterson thirteen months had passed like the flick of an eyelid.

"You'd better come home with me," his friend spoke. "Tell me what's happened."

"I guess I had. And there are a lot of things I want to know."

Several interesting events had transpired within the year. An aunt of Stuart's had died, leaving him several hundred thousand dollars. That had happened the very day he disappeared, so for a time it was thought he had been kidnaped. The police searched diligently, but there was no clue. People had not yet ceased wondering about the matter when Stuart appeared again in as ghostly a manner as he had gone, utterly unable to account for his absence. It was called amnesia and forgotten in two weeks.

Stuart got his money, much of which he sank into the best and most lasting securities he could find. He had an idea as to what had really happened and he had no desire to awake some morning and find himself penniless in a foreign world.

The second time he disappeared there was more sensation than the first. Then Peterson produced a letter in which Stuart hinted that he might be going away on a long journey and for Peterson to "help look after things." The truth of it was, there was nothing to look after; all his funds were in the most able hands of Morris & Morris, solicitors. He had left the letter as a clue, in case he should be missing again. It was something, he thought might happen, and he did not wish for any trouble to arise.

He was one of those people who can adjust themselves quickly to any curious set of circumstances, and he was too tight-mouthed to say anything. People felt him to be the type that might go drifting off without a word as to why or where. Since the letter was undoubtedly genuine that was the last of the matter.

Days and months came and went, but not so Stuart. Or at least, no one ever saw him. It was said he had gone to India, to Africa, to Greenland, and on an expedition to the South Pole. Even Morris & Morris did not know where he was, though for appearance's sake they put their tongues in their cheeks and looked wise.

There was the boom of 1938 and the slump of 1939 when it was said that things had never been so bad, but the memory of a people is a short thing

Then, at last, one day in 1940, a young man walked into his lawyers' offices.

"I had a hard time finding you," he said. "Things have changed since I was last here."

A young clerk gazed at him somewhat distastefully, as is often the way with clerks when meeting unknown quantities. However, the older Mr. Morris happened to be passing through the room, and he did not have to look at his visitor twice. Mr. Morris prided himself on his memory.

"Why, it's William Stuart," he said. "It's been a long time since you were in. You haven't changed a day; have you found the fountain of youth? Come into my office, Mr. Stuart, and we'll talk things over."

"Now," he said, when they were established in privacy, "we have been very successful in your absence. Half the money which you left as you know, was in our hands to invest as we saw fit. The other half was already invested in good securities, and of course has accumulated but little interest. Nevertheless, the first has gone far. You could call yourself a millionaire now." He pressed a button.

"If you will please sign these papers before——"

AFTER HIS CLIENT had gone the lawyer was thoughtful for a long while. A very strange man, was his opinion, yet a most youthful one. When he had suggested that they fly to Chicago that afternoon to look after some business interests, Stuart had refused, muttering some foolishness to the effect that he would hate to have one of the machines go off and leave him in mid-air. Nonsense. Every one knew that airplanes, especially the new rocket type coming into use, were safer than ground vehicles had ever been. And when Morris had hinted that it would be best if his client kept in touch with the firm, the man had smiled as though he had just heard something funny.

"Been wandering like Ulysses?" Morris had asked.

"Something like that," was the reply.

A very strange man indeed.

Others were to think similarly through the course of the years. When, in 1952, the clerk, now a high personage in the firm of Morris & Morris, saw Stuart walk in again, he looked just as he had twelve years before. In the meantime, the clerk had trained himself to remember faces. And that it was the same old Stuart was very certain, since by fingerprints and photographs, and by the more recent method of X-ray pictures, the man had identified himself beyond all shadow of doubt. During those twelve years he had passed out of all human ken, to return as though he had never been gone. Like the vanishing act of a magician, people who knew anything about it thought; nor were they very far wrong.

By this time Stuart had overcome his antipathy for air travel, though it was noticeable that he always wore a parachute during such voyages. He held himself in readiness at all times. "Not like he was scared," as an attendant said when the matter was brought to his memory, "but like he was waiting for the ship to break into pieces, and wanted to be ready when it did."

And Stuart kept his finances very queerly. For years he would never come near the firm, nor even write, then suddenly he would come hurrying in as though he had forgotten all about such things during the interim. And he sometimes made very strange requests.

"Give me a hundred thousand dollars," he said once. "In cash which you are sure will be good for at least the next fifty years. I'd prefer a hundred, but I don't suppose you have any idea what things will be like in that time."

He who had been clerk was now an elderly man. He gazed at Stuart in

dared fashion. "But, surely, sir, you don't expect to need it by then. Of course, I realize that you are keeping your youth wonderfully; but fifty years ——" His voice trailed off in contemplation.

Stuart only smiled. He had found there was no use in trying to appear natural to a world with which he was in essence unnatural. Sometimes he wished that he was like other people.

In features, in form, he had aged scarcely six months since that evening so long ago when he had met Peterson to find that more than a year had elapsed since he walked out of a building. He had changed in that time, however. There were little lines around his eyes now, as of one who has seen things such as few men are given to see; and the hint of a smile lurked always at the corners of his mouth. It was not a happy smile; it was one of faint derision, as though he saw the futility of things and laughed at it all. Strangely, it did not make him disliked. It made people want to smile with him at life.

He was a wonderful figure of a man. Tall, broad-shouldered, with springy step, he seemed a youth in his early twenties when it was known that he must be nearer seventy. He was welcomed wherever he was known, but he had few friends because of his way of going off and not being seen for years. And people died during such lapses.

Had he not appeared so seldom, his lawyers might have thought that he showed an unusual love of money. Whenever he did turn up it was to throw himself for a while into financial matters. He was always having his securities changed, putting his money into investments which he could be sure of for years to come. It seemed that he feared being left suddenly penniless.

"It would be a terrible thing," he was in the habit of saying, "to find yourself in an unknown world, utterly broke."

WITH THE YEARS he became a legend at Morris & Morris—the firm never changed its name during the whole of its lengthy existence. Whenever a new man was employed, the heads—the originators of the firm had been dead for years now—would show that beginner a photograph. "If you ever see a man looking like this," they would say, "bring him in at once to us. He won't have changed any, though it may be ten or twenty years till you see him. He's discovered the fountain of youth."

And the listener would nod sagely in solemn disbelief until the object of the discussion did walk in.

Had the firm published what it knew about him it might have caused a sensation throughout the world. However, it did not do that; it knew that some things are better kept secret. The company existed solely for the purpose of looking after that eternally young man's finances now, for they had grown to enormous proportions in spite of the fact that their owner had several times given large sums away. Also—and this was known only by himself—he had riches buried in a safe place in the Rocky Mountains.

But a man cannot live forever without calling attention to himself in one age or another. There was the time in 1987, for instance, when he embarked on the plane flying from Philadelphia to Denver. He was hardly noticed when he got on, and no one saw him get off. That was what caused the inquiries; he never did get off.

"I saw him," an elderly passenger said. "Noticed him especially because he was wearing a parachute, and you don't see many of them any more. He was a young fellow—maybe twenty-three or -four, the type you'd expect to be reckless. I remember now ——"

But the detectives did not care what he remembered so long as it had nothing to do with the case. They told him so politely but definitely. Still, they might

as well have listened to the story, since they never solved the disappearance.

When it was finally solved, its beginning had been forgotten. In 2043 the observer of a cruiser for the National Weather Control saw the figure of a man materialize almost beside the ship, which was going very slowly. The man was clothed in garments of an obsolete fashion, and the folds of a parachute were opening above him. Because the occurrence was so very queer the ship picked him up, though afterward its captain received a reprimand for doing so.

Ryal heard of the reprimand and the cause of it. Ryal—that was his only name, as was the custom of the day—was a young scientist interested in the study of time and the higher dimensions. He felt that the man might know something on the subject. He asked for Stuart, and because Ryal had a drag in the proper channels, Stuart was sent to him.

Ryal at once struck some chord in Stuart's being, and he decided to unburden his soul. "Yes," he said, in answer to a tentative question. "I'm out of time. I was born in 1915."

The scientist smiled happily. "How did you do it?" he asked.

"Sorry there," Stuart said, as he really was when the young fellow's face dropped. "I don't know how I do it. It just happens."

He went on: "You see, it's hard to explain. I don't just remain in time like other people do. Where they live naturally through the years I seem to be warped into all sorts of foreign dimensions which take me away from Earth, through blank spaces, for odd periods. I slip along here and there, always into the future, and I never know where I'll be in another instant. Once part of a building fell right over my head, and I'd surely have been killed if I hadn't just then found myself in the same place years later, long after the building had been repaired. In fact, it was after another had been built in its place.

"The first time the slip happened I thought I might be a victim of amnesia, but the second time I caught on. Even now I can't really explain it, though. By actual year measurement I'm a hundred and forty-eight years old, but in reality I've lived perhaps twenty-five or twenty-six years. I'm not sure exactly—living a month or so here and there and then dashing ahead for years makes it almost impossible to keep a precise count. For the first twenty-one years I lived normally, then one evening there was a whirl, and thirteen months had passed. After that things were normal for a few weeks, and then in a moment three years had gone by."

"But don't you feel anything in such intervals?" Ryal interrupted.

"Not at first. I thought I was simply dizzy. Then, when such things happened more frequently I knew when they transpired. One feels a wrench, but it's really not unpleasant. That's as near as I can put it; it's impossible to state my true sensations."

Ryal's eyes grew starry. "I should think so," he said. "Now sit down again and tell everything that ever happened to you. I imagine that for a while you must have been afraid of starving, but now that we don't have money any more you don't have to worry about that."

RYAL was the first person to whom Stuart had ever attempted to explain things who understood in the least, so he talked by the hour. The scientist's face assumed a rapt expression which he still wore when Stuart left; for the dream of the time intervals stretching away toward the end of things ahead of this man half hypnotized him. Where would Stuart end, he wondered. He said that each transition took him increasingly farther periods ahead. The first had been a year, the last, seventy-six years! Would the space come when

he could take a thousand years in his stride? With all his soul, Eryl envied Stuart.

But the way was not all roses. There was something nostalgic in turning suddenly to find that every one a person had ever known was dead and that the world had leaped ahead a decade, or fifty years, or a century. The first transitions of a year or so meant little after one was accustomed to them; ways and men changed hardly at all in so short a [illegible]

But when, after talking with [illegible] in 2303, he leaped the gap to 2170 it was more than Stuart could cope with. In that space of a little more than a hundred years things changed considerably. New powers had been discovered; explorers were off for the Moon and Mars. The language had changed so that it was only with difficulty that Stuart could make himself understood.

As though fate were giving him an opportunity to catch up with things, he remained in normal time for eleven months. Yet during the first half of that time he was in continual fear lest he be cast ahead to another era which he could not understand, where he would be an alien wanderer; and during the last half he began to be afraid that he might never go forward again. The spirit of roving was in his blood now. Roving—not through the miles, but through the years.

It irked him when the days passed normally. When he did slip ahead it was the day before he intended embarking upon a journey to Venus. Before that he had not cared to attempt such a trip lest, during it, he slip between the scheme of things to find himself unprotected in interstellar space.

The years passed him by like book pages, and he was suddenly in 2304. There had been but a gradual change during the last two hundred years, for progress was slowing. Space ships had gone out a little farther; men knew a little more, but the world was nearly the same. Stuart spent the few weeks allotted him in the study of weapons of that day, and when he shot ahead it was with the plans of an intricate death machine clutched tightly in one hand.

The thirty-fifth century was different. War was looming darkly in the future, and there had not been war for nearly a thousand years. The Earth was banded under one ruler as it had been for centuries, but there were other people beyond Earth's rule. Eryl discussed the matter with her counselors.

"Can't we arrange things peacefully?" she asked. "All quarrels have been settled in that manner for generations. Why is it that the Martians want to fight?"

A counselor shook his head. "It is mostly envy," he said. "Not only the Martians want war, but even our people do. For three hundred years the enemy has been marooned on the Red Planet, and in all that time not one of them has left his world. At first we compelled them to remain on the planet, lest they spread the source of the death of the lowlands. Then, finally, the disease died out, but some of the people of the Solar System were still afraid. The Martians felt, and rightly, that they were being mistreated. All this time they have been planning revenge."

"I know," Eryl said wearily. "I have heard all this dozens of times. But we have promised them equality and the right to do as they choose."

"Yet they still want war."

Eryl spoke as though to herself. "And we have no weapons because our ancestors felt there would be no more fighting, and they caused all their plans of death-dealing machines to be destroyed. The Martians have been able to invent new ones, and before our scientists can find the means to arm us we will all have been destroyed. Well, we must fight, and we will. But I think we will all die. Write the proclamation, Evaris."

"I have been waiting for your consent," said the counselor. "We do have weapons now."

IT WAS very bizarre, what he told. It was of a man out of the past of a thousand years, a man called Stuart. He seemed a normal being, yet he often moved in time. Since the second millennium he had not been on Earth, but he had appeared suddenly, two months before. At first Evaris had incarcerated him as a spy, since it was a week before he discovered common speech with the man. Then he found that this Stuart had brought with him knowledge of all machines of war from an age when there had been much fighting. He had shown a willingness to help, so weapons had been manufactured already.

"Why wasn't I told of this?" Eryl asked imperiously after Evaris had given the account in his long-drawn-out fashion.

"Because," she was told, "I did not care to raise your hopes only to have them dashed. It has only been in the last few days that I discovered Stuart was able to do as he claimed."

"Very well," said the young ruler. "But now I should like to see this Stuart." She pronounced the word queerly. "Bring him to me."

She was more than pleased when she did see him. He looked like anything except an individual who had been born sixteen centuries before. He was broared and strong; a little bigger, a little taller than the men of her day. He was handsome, though there was a far-seeing expression in his gray eyes. They seemed old, and old. It was as though he was an immortal who had looked upon the futilities of the world but had found it impossible to change them.

And she thrilled him. In all his wandering existence he had never seen a woman like her, as he would have said had he felt more at ease in her presence.

"You will fight with us?" she asked him.

He shook his head. "I'd rather not go out into space," he said. "You see, I have a way of finding that things go off and leave me. That would prove fatal beyond the atmosphere."

Her upper lip curled slightly. "I should think," she said in a voice slightly tinged with scorn, "that one who has lived for fifty generations would not fear death."

"Nor do I," he said. "Sometimes I almost look forward to it. But I've gone on so long now that I should like to see how it all comes out. It's awfully interesting to watch, really."

Nevertheless, something in her curling lip had piqued him, so when the time came to fight he went with the first ship. During the whole of the quick war he thought of Eryl. There was something so altogether feminine beneath her queenly exterior; he dreamed of her between the battles when he had time to snatch a few hours' sleep.

He was spared through it all; for he escaped the searching death beams and the less obvious danger of the airlessness. It was due partly to his leadership as well as to the weapon secrets which he knew, that Earth emerged victorious.

He returned to Earth as a hero, his name on every tongue. Eryl met him and honored him. He feasted at the palace, and that evening the two walked in the garden.

"I was afraid when you did go," she said. "Stay with us now."

The next moment she was in his arms, and he knew love as he had never known it in all of sixteen hundred years.

"Oh, Lord," he whispered, "let me stay this time. Let me stay——"

They sat down side by side on a marble bench and were silent a long time. Finally Eryl heard Stuart draw in his breath to speak. She turned toward him. At that moment he seemed to grow hazy; in an instant she

was alone. Attendants came running when she screamed, and they found her lying on the bench, her face buried in her arms, weeping as though her heart would break.

BUT THE WORLD passed on inevitably, and the time came when Eryl had been forgotten.

Knorahl lived ten thousand centuries later. That is not an excessive time as the world goes, but it is long for the race of men. To a person who had lived in the twentieth century Knorahl would hardly have seemed human with his great forehead and puny body. Yet his great brain held more knowledge than the whole of mankind had known in the twentieth century.

Seated near him was a man out of the distant past. In sheer weight he was twice the size of his companion, but in reasoning power there was no comparison.

Knorahl spoke. It was strange, Stuart thought, how much this man of the future could understand. He seemed to read his thoughts, to know everything that had ever entered Stuart's mind.

"What you ask," Knorahl said, "is beyond us. We understand much of the facts of time, but not to that extent. Where the ordinary animal body extends along the Earth's World Line in the fourth dimension, yours is warped through the sixth, so that it meets the World Line only at intervals. How that is we understand easily, since it is known how time warps and twists in the sixth dimension, yet you are the only being who was ever like that, at least to any great extent. It is as though time had been forgotten in your case.

"You are a freak of nature, just as the occasional two-headed calves and legged snakes of your day were freaks. A few generations ago our ancestors might have said that there had been a mistake in the cosmic scheme of things when you were created, but my people doubt that there ever are mistakes.

"For these reasons we cannot help you. We can control the fourth dimension, and the fifth to some extent, but the sixth is beyond us. Certainly we could not send you back to the third millennium."

Stuart's expression did not change. Sorrow had lined his features, but he was still a young man. Strength seemed to emanate from him. It was a strength born of knowledge and suffering.

"I was afraid you couldn't," he said. "I guess it's meant that I go on to the end. Perhaps, sometime, I can find beings who can send me back to the only one I ever cared for, but if not, I can take what comes. I hope so, anyway."

Knorahl's features were benign. He was starting to speak again. Perhaps he would have uttered words of courage or he might have given important information, but Stuart never heard it. At that instant the man out of time grew dim and vanished.

The intervals between which he touched the World Line of the Earth were wider now; he stayed in one era for increasingly shorter periods. It was five million years later when he was cognizant of things, but before he could adjust himself to the uniqueness of what he saw in that strange time he shot on ahead. It was as though he were allowed to glimpse, but not to understand, the wonderful advancement of the ages. He saw things which he could not even begin to understand, and as quickly as the impressions were registered on his mind's eye they changed.

It had been his idea to enlist the help of the human beings of the future, but he never had the chance. He was tired now of the incessant change, of the dwindling away of anything similar to that which he had ever known. The quick shifting of eras, which was becoming kaleidoscopic, wearied him. If it

had not been for his determination which had been born during the quick passing centuries, when he found he was so different from all other men, he might never have endured it. Even that determination was hard pressed to uphold him.

HE SAW the world as it was after ten million years, as it was after fifty, after a hundred, five hundred, a billion. He saw it when the dwindling of the air supply had caused its inhabitants to cover it entirely with a glasslike substance a mile or so above the ground. It was then like a great hothouse, under which strange trees and stranger men lived and thrived, but when he stopped again all life was gone. Now the great covering showed cracked and marred above his head, while great pieces of it had fallen in places. In the end the works of man outlasted man himself, all save one individual who had never been altogether of Earth.

What had become of the human race, Stuart wondered. Had it died, or had it migrated away to another star? It was strange that humanity had overcome nature so entirely, only to vanish like fog in a hot sun.

He was carried on again.

Now the Earth cover was gone; the world was nearly dead about him. It was cold. The air was thin and weak and lacking in oxygen, and Stuart nearly died before he was snatched on.

Eons later, though it seemed but a moment, he was no better off, for now there was even less air. The Sun was red in the heavens, big and close-seeming, but dim—oh, so dim! Earth was swinging closer in preparation for the long, final plunge into the mass of its parent; perhaps the inner planets had already gone. The ground was barren, the seas had vanished. Only the stars were bright, but of them all not one constellation showed even a hint of familiarity.

Stuart could hardly breathe. Something was clutching at his heart; his tongue was protruding; his sight was dim. He was not yet old to himself, but he had seen the world for untold ages. It was Ragnarok now, the Twilight. The planet that had borne his kind was going, and he would go with it. That was fair; dust back to dust in the end. It was worth all he had undergone; he was glad now.

It seemed that he was living in the long ago, before he first slipped into time. No; it was different—Eryl was near him; her arms were outstretched.

"My darling," she whispered, "I've followed you so long. Knorahl knew, but he couldn't tell you. I have reached you only at the end."

Then he was back again on the cold rock, and he felt that he had been dreaming. But Eryl was still with him, her arms were around him, her lips were against his. Was this real?

It mattered but little, for just then he felt a whirl and he slipped away. At the period when he would next have entered time the portion of the heavens where Earth should have been was filled with a blazing, blue-white Sun.

But Stuart thought that he and Eryl died together, in each other's arms.



The Avatar

by Clyde C. Campbell

The result of a scientifically perfect Frankenstein experiment with life

MICHAEL EARLE contemplated wholesale slaughter. But the spokesman of the investigation committee was unaware of this and discussed with himself at the top of his voice his interpretation of the proposition Dr. Earle had put before them, as seen in the light of his vast and erudite ignorance.

"It has been shown to be impossible to create life," he addressed himself and included the eleven others with his eyes. "Human life is therefore even more impossible, assuming there is something more impossible than the impossible. Understand—we have approximated the constituents of protoplasm, the life substance of the simplest of organisms, the amœba. Nevertheless, we have been unable to endow it with life. Further—we know not with what to give it life. The life substance can be created synthetically; that I grant Dr. Earle. The life force is beyond our comprehension."

He sat down and smirked at a mirror pasted in his hat and held unobtrusively between his knees.

"I've told you perhaps a hundred times in the last three hours," Earle said wearily, without standing up, "but I'll tell you again—life is an energy concept. You don't deny that, do you, gentlemen?"

They shook their heads. The spokesman added a thundering "No!" He could not resist the opportunity of using his voice.

"Well, then, it was very kind of you to admit we could obtain approximately synthetic protoplasm. Something like a reasonably exact facsimile, gentlemen. A reasonably exact duplicate is absolutely worthless, as even you should suspect. We must have protoplasm and nothing else. Having made the precise article, invest it with an overplus of the life force."

The spokesman banged his hand impressively on the table and jumped to his feet. "What is the life force?" he cried triumphantly.

Earle hesitated before answering. "Have you opened a book in the last twenty years?" he asked quietly. "The life force is as mysterious as electricity. It should be. It is electricity."

Ten men sneered with various distortions of noses and mouths. Earle glanced aside at the man sitting next to him. Tall, he would tower if he had not been built in such magnificent perfection: blond, powerfully muscled, yet ascetic, somehow, his beautiful—sheerly beautiful—face beneath the high-domed white forehead was a miracle of abounding strength and life.

Earle shifted his elbows on the table and stared cynically at the spokesman. "I could say something obvious concerning brains and short circuits, but I'll pass up the temptation. Few men today will dare deny the life force is an expression—a variant if you will—of electricity. Provide the life substance with a charge of electricity and you have an inanimate blob of protoplasm. But vest it with an overcharge and provide a means of retaining the surplus and you have the impossible thing to create—life."

"That's rather clever," the spokesman broke in, with heavy sarcasm. "A jolt of electricity should renew the life force. Electrocution ought to cure every



Shuddering, fearful, he connected electric cables about the forehead, chest, and legs. He opened a vein and injected synthetic blood.

known and unknown disease of man."

"No; but there are several it can cure," Earle said pointedly. "Now, to avoid further stupidities, let me speak without interruptions. I'm offering the world—not just my government, understand—a race of superperfect human beings, such as the one I have created," pointing to his companion.

"Wait!" Dr. Cunningham wheezed. He was a skinny old man who lived for a good glass of brandy followed by a

good reeking cigar. Science happened to be a convenient provider of such goodies. "Suppose we take two assumptions. First, we have no proof that you really did create the exceedingly handsome young man sitting next to you. You say it took you fourteen years to manufacture him and ten years for him to attain his present maturity and education.

"We have examined him and found his I. Q. to be 283; in other words, he is about twice as intelligent as a normally intelligent man. Privately it is my opinion that you have chosen an exceedingly clever young man and educated him to follow through your hoax. However, even if we believe you did create this remarkably intelligent, handsome young man, there can be no sense in our acceptance of your offer to populate the world with people such as this man——"

"Why not?" the young man, David, asked coolly.

"Well, for one thing, it takes twenty-four years to make and educate a man such as you. That's much too long."

"True enough," Earle commented. "But at the end of those twenty-four years you have an intellectual and physical giant, one worth working for. Besides, once the technique is perfected, the time of manufacture should be cut down to less than six months."

Dr. Cunningham traced the grain in the table with his bony finger. "All right," he conceded without looking up. "What becomes of the rest of the world?"

It was an accusation rather than a question.

Dr. Earle started. "Why," he said, "I hadn't given much thought to that angle. What do you want to do with them?"

The spokesman stood up with great indignation and turned toward the door. "You simply discard humanity!" He opened the door and pointed out, a masterpiece of Victorian dismissal. "We'll have nothing to do with such treason."

Slowly Dr. Earle got up, his aging body bent and tired. "The destiny of the world is more important than individual human beings. If we can raise the level of humanity, either by synthetic people or by intermarriage with synthetic people—of greater mental and physical strength than ordinary human beings—we have no right to prevent the great stride humanity would make."

Still pointing stiffly, the spokesman interrupted coldly: "We'll hear no more, thank you. Good night."

II.

LEANING heavily on David's arm, Dr. Earle left the building and hailed a taxi. He was too exhausted and disappointed to walk the few blocks to his hotel. Tired and downhearted, of course, for he had found refusal at the hands of every scientific institute, including even the one that paid him a tiny pension. In despair, unable to afford the costly research, he hunted furiously for a rich patron, and finally turned to one government after another. In each case he met with varying degrees of refusal.

He could teach David to help him. Even the fools of the medical investigation committee had admitted his intelligence quotient to be 283. His amazing intelligence and strength would provide an assistance equal to five ordinary helpers. In time, Earle thought, he would know all the old doctor knew and perhaps surpass him. He hoped so, he was so weary and old.

The struggle was still worth while, of course. Humanity would be aided in spite of itself. He only wished he could live to see the completion and part of the new régime in full progress; it did not matter, however, so long as he could realize before he died that the work would go on without him.

In David's hands, he felt, the idea would gain strength and vigor, would encompass economic reformation, a matter too far from his lifelong manner of thinking to be effected by him, would, he was sure, lay the complete foundations for a more perfect Utopia than the one his limited mind was able to vision.

Then what prevented him from talking?

"David," he said quite softly. He always felt a slight shyness when talking to his godlike creation.

David looked inquiringly at him. Dr. Earle felt a wave of power sweep over him at the motion, a surge such as a god must feel when his creation moves and lives. No; greater; for a god never doubts his ability to create life; in doing so, he acts within the province of a god. When man creates man from lifeless material, he becomes a creator himself, and rudely pushes the god from his omnipotent position.

Once he had had a vast number of chemicals spread before him—then blobs of inanimate cells—now the blobs of cells formed a perfect man and obeyed the dictates of intelligence. His creation lived because he, like a god, had given it the will to live. And that knowlege is cosmic power——

"We've failed, David."

"I knew that long ago," David replied quietly.

"There's only one thing to do——"

David leaned back again. "We should have done that immediately, instead of wasting money and time. Now we have to start all over from the beginning, instead of working with a bit of capital to fall back on."

Tiredly, Dr. Earle covered his aching eyes to shield them from the gray London light that held a painful luminous quality. "I was hoping it would get us what we needed," he said feebly.

"What're we going to do now?"

Dr. Earle shrugged. "I wanted to teach you and take you as my assistant."

"To make others like me and save the world in spite of itself? We need money even for that."

"At least I won't have to pay for assistants."

David shifted to escape an annoying straw. "No: but the cost of materials and a workshop'll be more than you can afford. You're in debt now, and it'll probably take the rest of your pension to cover them all."

"I don't want any lectures!" Dr. Earle said.

"All right; but you've got to face the facts. Saving the world is a hard job. Perhaps it's worth it. I don't know. And perhaps you think that with the combination of both of us, it wouldn't be impossible."

"I know." Earle nodded his head. "We still need money."

"Right. You can't get away from that. Is there any way you can get enough money to see you through with the job?"

EARLE threw up his hands and stood up helplessly, forlornly. "No place, no one—I probably won't even be able to count on my pension when they get through flinging mud at me. I'll be disgraced. The whole world's laughing at me."

"Well, then?" David asked harshly.

Wildly, Dr. Earle faced him. "I made you!" he cried. "I made you, with no help, no surplus of time, and with almost no money. Alone, working fourteen years, I made you. And I can make another, a hundred, a million like you! And I won't have to work alone."

David shrugged and rested his hands under his head.

"I can depend on you, can't I?" Earle demanded anxiously.

"What do I know about the work?"

Earle sat down. In despair he saw the crumbling of his plans; to him this sounded like refusal or its equivalent.

"I'll tell you," he said, as quietly as he could. David turned to him, bored, and prepared to break in rudely if necessary. "You know enough to follow, thus——

"The substance hindering the formation of synthetic protoplasm most was artificial protein. Proteins are the most complex compounds in the field of chemistry, since they are the largest atomic aggregates constituting individual molecules that are known.

"In diet, fats and carbohydrates can substitute for each other. One can be changed into the other by body synthesis. But proteins are distinct. Only they contain the vital nitrogen. Fats and carbohydrates have been manufactured artificially for some time, even before my process was discovered, as their constituents, carbon, hydrogen, and oxygen are in complex—but not too complex—formation.

"The protein molecule, however, defied synthesis for a long time. Certain physical properties of proteins made it impossible, with the previous limited apparatus, to determine their molecular weights. It was thought their molecular weights were somewhere between sixteen thousand and three hundred and fifty thousand. Quite a jump—so large, in fact, that nothing could be done to further synthesis, because with their existing methods of determining complex molecular weights, organic chemists were helpless."

He waited until David got over his restlessness.

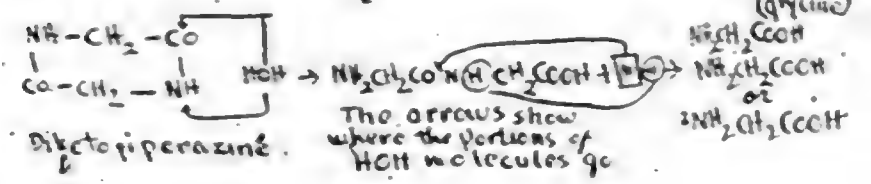
"Since the molecular weights couldn't be obtained, it was impossible to determine in what proportion the carbon, hydrogen, oxygen, and nitrogen, which constitute the protein molecule, are combined.

"Ordinary synthesis is accomplished by finding the primary basis of a compound, and adding to the primary basis until the molecular weight is reached. That can be followed in the synthesis of proteins, once the molecular weight is found. By an improvement on the Svedberg process, which depends on the rate at which colloidal protein particles —molecules—settle under the tremendous forces exerted by an ultracentrifuge, I determined the molecular weight of a protein molecule, and thus knew how far to proceed in synthesization.

"Since the acid hydrolysis of proteins yields alpha-amino acids, it was assumed that these structures were present in protein molecules. But Troensegaard disagreed. Because pyrrole rings were found in some amino acids obtained from proteins and because proteins yield pyrrole derivatives when destructively distilled, he concluded that proteins are made up of numerous pyrrole rings. Therefore, merely combine pyrrole rings until proteins are reached.

"Another theory was based on the fact that alpha-amino acids yield diketopiperazines—the result after extracting water from two molecules of an amino acid, which is an organic acid in which one or more hydrogen atoms of the hydrocarbon chain have been replaced by an amino [$-NH_2$] or substituted amino group——"

HE SCRIBBLED a formula on a slip of paper and showed it to David, who glanced at it casually.



IT was suggested that proteins were made up at least largely by these cyclic compounds. That was the diketopiperazine theory.

"The third theory, which I followed, was the 'peptide linkage,' of Emil Fischer's.

"A dipeptide is an open-chain compound, and is an amide of an alpha-amino acid, in the formation of which the amino group of another alpha-amino acidemolecule has taken the place of ammonia. The simplest dipeptide is glycylglycine: $NH_2CH_2CONHCH_2COOH$. A tripetide would have three alpha-amino, which may be alike or different, similarly arranged. A polypeptide would have many units.

"When diketopiperazine is hydrolyzed by acid, the dipeptide—glycylglycine is obtained. When the ester of glycylglycine is treated with alpha-bromopropionyl chloride, the product is alpha-bromopropionyl-glycylglycine ester.

"Upon treatment of this compound with ammonia and subsequent saponification, alanylglycylglycine results.

"This process may be continued, resulting in the formation of longer chains with different amino-acid units. Fischer's ultimate achievement along this line was the synthesis of the peptide with eighteen amino-acid radicals was therefore an octodecapeptide. His compound was leucyltriglycylleucyltriglycylleucyloctaglycylglycine, the molecular weight of which is 1213. Although this compound is far from even approximating a normal protein molecule, it shows definite protein characteristics. It is precipitated by phosphotungstic acid, it gives the biuret test, it is hydrolyzed by pancreatic juice, et cetera. But the molecular weight is far too low.

"I discovered a technique to link even more amino acids than Fischer did, and thus finally reached proteins, by combining the compound Fischer got with a number of pyrrole rings and diketopiperazines, and sent a million and a half volts through the mixture to supply enough external energy to realign the mixture into the complex protein arrangement.

"Since the ration of fats, carbohydrates, minerals, and proteins were already known, the combination of these substances was simple laboratory procedure. The result was exact protoplasm, the material of life, from which all portions of the body can be synthesized.

"Into that particle of protoplasm I sent my charge of electricity, providing for the retention of a surplus of energy. And I had life."

They remained silent for a while. David was fidgeting nervously with a straw he had pulled from the mattress.

"The chemicals and electrical power must have been expensive," he remarked at last.

"They would have been, if I paid for them. I used the institute's."

"And there's no way of your getting money?"

Earle shook his head sadly.

"Let me get the facts properly," David said cautiously. "You can make any number of men and women as perfect, mentally and physically, as I am."

"More perfect, even," Dr. Earle corrected.

David said nothing for a time, his lips pursed thoughtfully and his eyes narrowed, thinking over Dr. Earle's correction. Evidently he did not like it. He sat up on the bed, leaning on one hand.

"I'll get you the money," he declared. "Only, I insist on making it in my own way, and when you're ready to manufacture others like me, I want to have an equal hand in the work with you."

Dr. Earle pondered this last statement. "Why?" he asked.

Since he had asked David to help him, as an assistant, there seemed to be no logical reason for such a demand. But

David had leaned back again, closing his eyes, and refused to explain.

III.

LIVING in the ugly, depressing boarding house without David was uncommonly lonesome. Not that David had ever been particularly good company; he had, in fact, demonstrated strong tendencies from his first days to be selfish, morose, tight-lipped. Dr. Earle often suspected him of possessing an unuttered contempt for the lesser intelligence of his creator.

Usually he had left unanswered most of the doctor's shy attempts at conversation, and through conversation intimacy; permitting the embarrassed doctor to go on awkwardly while he read and ignored him.

Also, he never attempted to help in any way, nor did he accept kindly Earle's suggestion that he learn something of the world, preferring instead to read sociology, the sciences, and philosophy, while the weary, distraught old doctor was struggling to meet his obligations, going half mad seeking financial assistance and proffering no consolation when Earle found only rebuffs.

Nevertheless, in spite of David's undeniably antisocial nature, it was lonesome. Dr. Earle was old and he needed company of some sort to take the place of his fumbling thoughts, mired as they were in dread of failure and in constant fear of his creditors, who dunned him incessantly through the mails and by personal, insulting calls he could not protect himself from.

If a mother misses her children when they leave her, how then should he feel but forlorn—he who had been father and mother to David, not only in his rearing and education, but also in his actual creation.

Twenty-four years ago, a man of forty-seven, he had been doing chemical and surgical research for the Dunne Institute in New York, receiving a pitiful salary in return for his discoveries which were credited to him casually, as though he was a machine, the patent of which was held by the institute, and his discoveries but another example of the institute's marvelous efficiency.

His discovery of synthetic protein he turned over to the institute; the secret of artificial protoplasm he kept for his own; and for fourteen years he worked days for the laboratory that employed him, keeping long night hours for his creation of life.

IT WAS a winter night, cold and dark outside, but warm and light in the laboratory; and even when the lights above the other worktables were turned off as the men left, one after another, his brilliant seven-bulb light suspended above his laboratory bench in such a manner as to prevent all shadows, regardless of the position he held his hands and head in, illuminated the room sufficiently to satisfy him.

As he raised his eyes to say good night to the research workers as they left, he could see the end of the enormous room robed in the shadows of the rows of zinc-topped tables.

Until the last man had left he probed an open wound in the abdomen of an anæsthetized guinea pig, striving to cauterize the ends of several capillaries with a crude electric needle, the first one to be tested before general surgical use. And for some time, even after he was alone, the frugal nature of the true scientist forced him to continue work on the guinea pig, lest the animal be wasted needlessly, though he was straining with anxiousness to be at his important task.

The blood stopped flowing at last; all the capillaries had been closed off, though a good deal of flesh had been burned, too, but that did not matter, even in a human operation, since the inception would be refined considerably

within a short time. He increased the stream of chloroform: the animal gasped and jerked almost off the table before lying still.

Now he found his hands trembling. No amount of steadying would pull his nerves together. He went to the ice room, throwing the tiny corpse of the guinea pig down the refuse shaft. Cadavers hung, slabs of lifeless meat, on butcher hooks.

He passed them without a glance, and in the white, deathly glare of the uncovered lamp, shuffled nervously to a locked compartment. His fumbling hands found the key and the lock; he pulled out the chamber—six and a half feet long, three feet wide, and two feet high—on effortless ball bearings.

The perfectly formed body filling the ice chamber he pulled out carefully, and gingerly getting his shoulder underneath it, he staggered out to the refrigerator room, back to his laboratory table. He had to go back to turn out the light.

For a long moment he stared down at his creation, a thing of physical perfection, and, he knew, mental also, he could make it live and think. But even if it refused to rise, breathe, and walk the Earth, it still would be the most perfect man, and there would be satisfaction in its magnificent beauty, though he would have to begin all over again.

He thought back to the inception of his dream. The steps to its completion were in wonderful order, as he pictured them.

Artificial protein—he made that and gave it to the institute to do with as they liked. In itself, the discovery had no commercial value. He knew that, since natural protein, dissociated from any other substance, was both cheap and useless.

But protoplasm is chiefly protein; the other constituents long ago were synthesized; only the manufacture of artificial protein hindered the laboratory synthesization of protoplasm.

He worked on the idea.

Fortunately the institute required no notes: these were researchers in pure science, working for empirical purposes. The completion of a commercial invention was all they demanded. So Dr. Earle was able to work in secrecy.

First he made protoplasm—a tiny white blob of inert material—and into it he sent a minute charge of electricity. The cell contracted violently, expanding only when he opened the circuit again. But it remained still—motionless.

Anxiously he increased the charge by an almost imperceptible fraction of a milliampere, and watched breathlessly the result under a microscope.

The cell contracted in the same violent spasm as before, but when he opened the circuit it did not go back immediately to its normal shape. Feebly, then, it moved.

His heart pounded insanely. With nervous hands, he dropped a bit of stagnant water, busy with thousands of microscopic lives, over the blob of protoplasm as it quivered and attempted to move on the slide. In the water it seemed instantly to come alive, as though in its natural home. Displaying remarkable vigor, it chased and ate the smaller particles of life, until it came on one larger than itself and was ingested.

He came away from the microscope, intoxication chasing through his veins. He had lost his sensate protoplasm. In its stead he had a brain-staggering dream. The price was absurdly low.

Now his mind could not rest. He dreamed continually of creating human life. The vacation of two weeks he spent in his apartment, scarcely taking time to eat; and sleep was cast away in myriads of calculations. Though he suffered a partial breakdown and had to spend a month at a sanatorium, the problem was solved.

He commissioned a sculptor, a friend of his, to make a statue of the most per-

feet man he could conceive. Meanwhile he worked on his cell growths, his tests, his checking on the analyses of body substances by other experts, finding errors constantly. The sculptor finished just as he did.

ACCORDING to the ancients, the perfect man should be six feet two inches tall and weigh between one hundred and eighty-five and one hundred and ninety-five pounds. The statue his friend made was in these proportions, but the head possessed more character than the sheepish Greek god with his nose continuing the line of his forehead, full loose lips, and soft rounded chin; having instead a finely carved nose, the nostrils of which flared slightly and the bridge curved almost unnoticeably, the mouth beautifully formed but strong, and the chin longer than the classical ideal, rounded, jutting a bit, and full of strength and character.

The powerful muscles could be traced under the cold stone; rather than brutal knotted muscles, the artist had preferred the long, whipcord, tireless kind. The legs were exactly half the length of the statue; from the front they seemed to taper down from the smooth thigh to a lean, springy ankle; but when seen on the side, the calf was gathered smoothly as a well-formed biceps.

The back, chest, and stomach were strong with cleanly marked muscles; and the groin definitely appointed, as in a Greek athlete. And the statue posed in the corner of Dr. Earle's room, sure of its human beauty, but apparently conscious of the more serious matters of life.

Now, over a period of years, the doctor constructed his skeleton, and robed it with flesh, through which he laboriously conducted the vascular system and the innumerable nerves. With the utmost pains he built the respiratory and glandular systems, discovering new phenomena constantly, and, with the care of a pure scientist, annotated them. The skin, the nails, the teeth, the hair—all these and every other part of the body he made synthetically, disdaining the temptation of using parts of cadavers. Fourteen years he worked like a demon, taking little food and trying to get by with only four or five hours' sleep.

It almost killed him, but he did it.

And now he stared down at the unmarred corpse that had never lived. In every muscle, every clean line of limb, sweep of body outline, and poise of head, it duplicated the statue his friend, the sculptor, had made of the most perfect man he could conceive.

The light flowed lovingly along the smooth planes of the unliving corpse.

Dr. Earle sucked in his breath tremblingly. He would have to send a charge of direct current through the beautiful body. If it failed—if his millions of synthesized physical parts held one flaw or——

He could never find it, and the man would remain a statue chiseled in dead flesh that would putrefy and leave white chalk bones.

Shuddering, fearful, the doctor connected the electric cables around the forehead, the back and chest, and both legs. He opened a vein and pumped synthetic blood through the body.

He pulled the switch, sending 75,000 volts and .0004 milliamperes into the motionless statue, carved of flesh and filled with blood. The muscles contracted——.

He advanced the amperage to .0009.

The muscles expanded slowly. He pulled down a cone with shaking hands and held it over the mouth and nose. An alternating current of air pumped into the lungs and was drawn out again. The chest rose and fell.

Into the heart he injected a large hypodermic of adrenalin.

The heart jumped——

It beat—tremblingly at first—gaining strength and regularity——

The chest rose and fell of its own accord.

And later that night Dr. Earle walked out of the laboratory, supporting with his weak, exhausted body a giant wrapped only in the old doctor's overcoat. The strong legs bent shakily at the knees and he walked with the lack of accustom that an infant tries its steps; his eyes stared in vacant speculation.

Dr. Earle called a cab. The giant was no more used to sitting than he was to walking. The next day the doctor applied for his pension and from that day on, for ten years, he devoted himself to teaching his creation.

He was disturbed by a knock on the door. Resigned, he stood up, expecting to open the door on an angry creditor, even though it was nearly eleven o'clock at night.

The landlady stood outside, holding a tray with two glasses of milk and a dish of light cakes. She smiled with her brand-new, startlingly white false teeth; the wrinkles around her eyes were channels of sour humor. She had just had her hair bobbed and the thin gray hanks were set in weird volutions.

"I thought maybe you an' yer son'd like some milk 'n' keyeke 'fore you went to bed," she smirked.

"David isn't here any more.", Dr. Earle snapped.

Her face fell. She nearly dropped her tray. "Isn't here any more? Where'd he go?"

"I don't think that concerns you."

She pushed the tray into his hands and fled downstairs. Hysterical unmuffled sobs grated up the stairs from the kitchen. He kicked the door closed and stood looking vaguely down at the tray. The other glass was a cruel reminder. He set them down on the chest of drawers, leaving all untouched. There was nothing he wanted to do less than eat.

But he went to bed because there was nothing else for him to do; and he huddled with the blankets between him and the stabbing straws of the mattress, his worn overcoat pulled over him for cheerless warmth.

IV.

IN SIX MONTHS David had gone far. He lived in the Grand Palace Hotel, an entire floor taken up by him and his staff of servants. A long automobile, of the most expensive make, driven by a liveried chauffeur and footman. These things, and the worship thrown under his unheeding feet, he paid no attention to, despising them for less than their worth.

Though he accepted the steps of his rise without gratification, he really had done much.

When he left Dr. Earle, he was clothed cheaply: the best the penniless old doctor could afford. David recognized the fact that he would have to be well-dressed if he wanted to make money, even though he should never have a penny in his faultlessly tailored pockets.

Therefore he got a job in the first place he could find. As it happened, it was a department store. They placed him in the men's clothing department, though actually they needed no extra help. Within two days husbands suddenly found themselves in need of new suits, and their wives made a special point of picking out the correct weave and cut with the utmost care.

This was appreciated by the store; on the other hand, the rest of the salesmen were ignored, and David had to do all the selling. True, he got rid of worthless and outdated stock, but he had more to do than he could handle.

So, after a week, with much debate and conference about precedent, they shifted him to a manager's position, at a magnificent salary. He stayed there long enough to buy himself sixteen suits and all the accessories he could get with

the credit his manager's salary would allow.

This was after he had gone to the legitimate theater one night, when his reading suddenly bored him. He had read several references to the theater—the strange form of Shakespeare's work indeed had bewildered him until he decided the plays fell into the category of recited poetry—but he had never seen a play performed nor a motion picture.

The new medium he discovered was extremely interesting. He realized the unreality of it, yet he wanted to know how it was done.

Now he haunted theaters and motion-picture palaces. The mawkish worship of movie magazines disgusted him until he found in one the salaries movie idols made. That resolved into a new purpose. He studied films and plays with a different interest.

Play actors, he recognized, possessed a distinct education and technique, except in certain instances. Movie actors were uncertain, amateurish, and in general seemed to know less about acting than the average stage ham. The bigger the name, the worse he usually was. If the actor took the part of Napoleon, he was still the actor, with the same mannerisms and method of delivering his lines as he had been in every other picture, but the other actors walked about with their hands sticking out, calling him Napoleon. And that, he thought, constituted movie acting.

He went to the largest company in Shepherd's Bush, outside London. The entire staff, from top to bottom, went mad. His lack of experience was almost an asset. Therefore he commanded an immediate salary of amazing size, refused to sign a contract that would bind him at all, and demanded a royalty on every film he made.

They gave him everything he wanted, gladly; and to further matters, spent two hundred and twenty-five thousand pounds on publicity. A suitable story was found and he was rushed into production. Two months finished the picture, at the greatest cost in movie history; whereupon it was hastened into the general market, after a ridiculously elaborate preview, and David Belvedere—the result of a week's brain cudgeling by the production staff—was given to the world.

The film packed every house it was shown in, from London to Tokyo and back again.

And now David occupied, with his retinue of liveried servants, the entire floor of the Grand Palace Hotel, was driven to work in one huge car, and to social functions, at which he was always in demand, in another and larger car.

He had two hundred suits. His linen would be sufficient to start another department store.

But still, while he paid for Dr. Earle's few expenses, it never occurred to him to permit the old doctor to live with him, as he could easily have done, nor even to get him better quarters.

Meanwhile, his creator lived in deadly monotony, spending his futile leisure in seeing David's pictures over and over again, clipping press notices, and never thinking of moving to a more comfortable place. The only relief he knew was that his creditors no longer plagued him; his inconsiderable debts had been taken care of by his successful, selfish creation.

Dr. Earle waited patiently for his seventy-second year and the approaching realization of his dreams.

V.

ON THE OUTSIDE it looked the house of a respectable, wealthy man, with some extraordinary good taste in architecture and landscape gardening. According to the locality, it could not have been anything else; a large house—almost a mansion, in fact—as old as the

section near Notre Dame de Paris and surrounded by a square, flat lawn, a hundred and fifty feet long and wide.

Monsieur Gerard Beaumartin would show you through the entire thirty-two rooms, with its picture gallery on each floor, of which ostentatious and unnecessary display he was remarkably proud. That the light from the two windows at each end of the corridor, constituting the gallery, was insufficient, and the electric illumination singularly poor—the oils cast back the light like mirrors, and one could see only the shape of the bulbs—made no difference to him. Monsieur Gerald Beaumartin had to like you well enough to display his hoarded treasures.

As far as any one could see, Monsieur Beaumartin did nothing for a living. Though his father, fifty years before, had sold out his enormous perfume factory at an unbelievable profit and invested the entire amount in five per cent government bonds which presented his son with a large income every year, this was untrue.

Gerard Beaumartin, respected by citizens who knew him only by name and the estimated figure of his wealth, did not need the great fortune his father had left him. Why he did not need it, we shall see.

Seven men sat at the long table in Beaumartin's library. All, including their host, were quite wealthy and seemed honest citizens of solid respectability, conveniently devoted to the policies of the latest cabinet.

"It amounts to this: we have no leader," Beaumartin said between sips of sparkling Burgundy.

The six others nodded agreement. They were remarkable only in that they were of about the same age—fifty or so—and undistinguished in appearance except for their being well-dressed and exceptionally well-fed.

"There are the seven of us, however," Monsieur Lessac pointed out.

Beaumartin considered. "Well, true enough," he admitted. "But we have no leader. We have one thousand and three groups, a membership of half a million, in every large city in the world. We are represented in every nation.

"Five hundred thousand members, all waiting for us to act; and we can do nothing until we have a man to lead us!" he thundered. "We must get a leader!"

"What about you?" Monsieur Clement demanded.

"I?" Baumartin echoed. "Do I look like a man the world would follow?"

They admitted silently he did not.

"What about one of us?" Monsieur Clement asked shyly.

Beaumartin snorted. "Do you imagine yourselves leaders?" he asked cuttingly. "If you do, forget it. You overtip servants for fear of offending them, or calling down on yourselves their scorn." He laughed as loudly as he dared, lest he anger them. "We must have a fearless man. A man the world will follow. A leader men will be glad to die for!"

Monsieur Leslac bit his nails in an agony of thought. The rest gulped down the wine and chewed their cigars out of shape. Monsieur Clement created a disturbance by hauling an English newspaper out of his coat pocket and spreading it out at full length on the table. He skimmed the large pages over until he came upon the front page.

He smiled nervously at the glares they cast at him and fumbled desperately with the article he wanted.

"Have any of us seen Monsieur David Belvedere?" he asked embarrassedly.

Beaumartin grunted. "What about him?"

Lessac coughed astonishingly and turned the other way, ignoring his colleague. This made Monsieur Clement more nervous than ever. He swallowed an enormous lump in his throat and at-

tempted to give his argument as logically as he could.

"London is mad over him," he stated feebly.

"A matinée idol. Serves him right," Beaumartin decreed.

"No," Clement contracted apologetically.

"I say he's a woman's man!" Beaumartin shouted his ultimatum and turned his back on Clement, who was anxious to get back to the shelter of his seat, but just as anxious to win his point.

"Well, he was until to-day," he admitted. "But the men in England are as worshipful of him as the women."

"What happened?" Monsieur Jolez asked, trying to ease Clements' suffering.

"Wishbone Harry Crank——"

"Wishbone?" Beaumartin repeated in amazement.

"He had great shoulders and almost no hips, so they call him Wishbone, because he looks like one," Clement explained. "He insulted Monsieur Belvedere by calling the woman he was with Monsieur Belvedere's mother. She's a very rich woman, quite a bit older than her escort; in fact, old enough to be his mother, without any stretch of imagination. But Monsieur Belvedere took offense and challenged Monsieur Wishbone Harry Crank, who is the pugilistic champion of England in the heavyweight class, to fight with bare fists on the spot, which was a well-chosen one for a crowd of the best people in England.

"They enjoyed it immensely. And to further enjoyment, Monsieur Belvedere with his naked fists beat Wishbone Harry Crank to what is known in England as a bloody pulp. According to the English journalists, Monsieur Belvedere was untouched by the champion; indeed, he went to work at the studio next morning as though nothing had happened. And England, including the men, is mad over him. He's a positive hero. There's talk of making him a member of parliament, or even prime minister. And there are hints of underground plans to make him dictator."

The Council of Seven considered. Monsieur Beaumartin looked from eye to eye around the long table. He saw approval.

"We leave everything in your hands," Monsieur Lessac spoke for the entire council. The others nodded.

VI.

HOME early from the studio, having finished the day's schedule in unusually quick time, David read through the last volume of Frazer's "Golden Bough" rapidly. He had cultivated the habit of photographic reading: instead of having to read words into sentences and sentences into paragraphs, he could extract the meaning of an entire page. In this way he could read as fast as the average man can skim through a book, and skim through a book as fast as the average man can turn the pages.

He finished the volume in half an hour and stood up, wondering what to do until dinner, which was not due for at least another hour.

Apologetically, the butler entered and stood waiting for recognition.

"What is it?" David snapped.

The butler gulped. "A gentleman to see you, sir." He held out the silver card plate.

"Gerard Beaumartin? Have you ever heard of him?"

"Oh, no, sir."

"What does he want?"

The butler considered. One never knew when to expect a kick or civility from this new master of his. "He didn't say, sir. Just wanted to see you, sir."

"All right. Get out and send him in. But stand near the bell. I may call you to have him thrown out."

David had no time to wonder what his visitor's business was with him. Taking short, springy steps, Gerard Beaumartin seemed to bound quickly into the room and across to David.

"I am Gerard Beaumartin, Mr. Belvedere," he announced, shaking David's hand and looking up amiably at him.

David mumbled a greeting. He felt out of sorts and his right hand still hurt across the knuckles: the fool was squeezing it painfully.

"You are a busy man, Monsieur Belvedere," Beaumartin said hastily, without a trace of accent, "and so am I. Therefore, I'll get down to business immediately."

They sat down, facing each other.

"I represent the Council of Seven. At present I am the temporary head of the council. We want you to become our leader."

"Of what?" David asked disinterestedly.

"Frankly, Monsieur Belvedere, we are a Terrorist organization. We have one thousand and three groups scattered over the world—a total of half a million members. We want you to lead The."

David looked up startled. "To lead what?"

"To lead The. You see, Monsieur Belvedere, as I said, we are a Terrorist organization, whose intention is to overthrow every form of government in the world. In their stead, we are going to set up a World State, with you as its dictator. As a Terrorist party, we have no need for a label nor for pretty stationery. So we disdain a name for the party and call it 'The,' when there is necessity to refer to it."

"What's the real purpose of that?" David demanded.

Beaumartin hesitated. "Well," he confessed, "there is something more pointed than that. Since we have given the party no name, the newspapers cannot refer to us. We are a force that is felt in the world, but its namelessness make it a force one cannot point to definitely. You might say it's a bit of camouflage—protective coloring, perhaps."

David nodded. "I see. Quite clever."

"Now, we are something like Communists, something like Anarchists, something like Fascists—only in every case, more so, if you understand. That is to say, we exceed Communism in that every person will be taken care of by the World State; a job will be found for him since the State will control every business.

"We are more anarchistic than Anarchists in several respects: we are going to do away with money and governments of every sort, except ours, of course. We are more in favor of force than Fascists because the government of the whole world shall be in the hands of one man—regardless of the means to effect the overthrow of all other governments. Naturally, because we are Terrorists—realizing that the revolution cannot be accomplished without bloodshed—we are in favor of a bloody revolution."

David pondered a moment. To him it looked exceedingly queer. "What's in it for me?" he asked pointedly.

"The dictatorship of the world, for one thing——"

"I don't need it. This year I expect to make two hundred thousand pounds."

Beaumartin jumped to his feet excitedly. "We'll give you five hundred."

"Now wait a minute," David broke in. "What's in it for you?"

"I want only one thing," Beaumartin replied in a rush of emotion. "I want to supervise the building of cities. I want pretty buildings of different colors that'll harmonize into a definite color scheme and have webbike bridges thrown between them and landing stages for the airplanes so they can alight in the city. We have men designing the most hand-

some airships you ever saw—built of shiny metal and beautifully streamlined—and they can travel at a rate of a thousand miles an hour and throw all sorts of deadly bombs and rays."

DAVID waited patiently for Monsieur Beaumartin to cool off. "You have only half a million members? That's hardly enough."

"I know," Beaumartin rushed on. "But with you as leader, we can get almost every man in the world to follow us. We have the most influential, wealthy men in the world behind us."

"Why?"

Beaumartin spread his hands. "Mostly for the same reason I want to see the World State in power—so we can have exquisite cities of the most subtle color patterns and eugenics and handsome airships and no money——"

David clapped his hands to his head. "It sounds crazy to me."

Beaumartin nodded vigorously. "That's the beauty of it. Napoleon only wanted to conquer the world. What he was going to do with it after, he didn't bother to think about. But we have definite aims. We want to uplift the world, beautify it." He turned his eyes ecstatically toward the ceiling.

"Five hundred thousand pounds?" David asked.

"Yes!"

"What's my guarantee of payment?"

Beaumartin looked astounded and contrived to mix a little element of hurt with his astonishment. "Why, we can't sign papers, you know. No contract of any sort. That's one of the things we're against. You'll have to take the words of the Council of Seven."

"That's hardly a concrete guarantee."

Beaumartin scribbled a telephone number on his personal card and handed it to David. "No. But I'll leave a pamphlet with the aims of our organization with you, and also a typewritten copy of our policy if you join us. You think it over—keep it secret, of course, and show it to no one—and call this number when you have decided. Just give your name to the person at the other end of the telephone and say yes or no. Ten days after you say yes there'll be five hundred thousand pounds in gold deposited to your name in the Bank of England, and every year thereafter another five hundred thousand in gold. In return you'll have to give up all other work and follow our instructions—with your own changes and discretions, naturally."

He shook David's hand, clapped his hat on backward and bounded out as quickly as he had entered.

VII.

"YOU were wonderful to protect my honor so masterfully," Mrs. Clara Widgey—better known as "Bubbles" for obvious reasons—gushed.

David, from his position against the mantel, looked coldly down at her. It would take a more youthful and less nearsighted eye than hers to detect the faint but undeniable sneer on his beautiful face. He drew gracefully on a cigarette, choked the smoke down and coughed it out. Smoking seemed more than he could accomplish. He tossed the cigarette into the fireplace.

"Come here and sit down beside me," she wheedled, squeezing tightly against the arm of the great couch.

He walked slowly across the room, slumped down on the end of his spine, his hands in his pockets and his feet thrown far out in a straight line resting on his heels.

"Don't you want to marry me?" she repeated for perhaps the thousandth time since she had seen the bleeding, unconscious remnant of "Wishbone" Harry Crank, English champion of the world, lying at David's spurring feet a week before.

David stood up. He was doing some-

thing few men in his position would care to do. When he put his hat carelessly on his head at precisely the most becoming angle and strode out of the door, he was throwing away ten million pounds. But he did it without a word, without saying even good night and certainly without thinking of his loss. He simply walked out, leaving the elderly "Bubbles" biting her wrinkled lip and attempting to stem the tears that threatened to smear her mascara all over her blotchy red complexion.

The chauffeur and footman were asleep at the wheel. David prodded the footman angrily with his cane. The man jumped out, waking the driver at the same time, and yanked the door open for his master.

Disgusted, David sat back. Clara was a fool, of course; but even with her monumental lack of intelligence, she ought to realize that at her age, in spite of beauty surgery and creams to fill in deep wrinkles, she was an unsightly old hag. He despised himself for acting the part of an idiot.

Still, he could understand what had made him fight Wishbone Harry Crank. Clara had ten million pounds, all of which—with herself, naturally—she offered him. Ten million pounds would take care of Earle's experiment and leave plenty over. Besides, he could earn another quarter million or more a year for almost any number of years to come. It had seemed like a good plan.

And when the oxlike Wishbone Harry Crank, anxious to make a good impression on the giddy little chorine with him, had shuffled over and cast reflections on David's nonexistent ancestry and rose to greater heights concerning Clara's possible relationship to him, David felt perfectly cool.

"That demands an apology," he said calmly.

"Oh, you think I'm gonna 'polergize to a bloomin' flower like you!" Wishbone sneered, pushing his battered face close to David's.

David stepped back and struck him with his open hand. The crowd that had gathered laughed uproariously at the terrifically loud report. Wishbone's face and thick neck grew as red as the mark David's hand had left. He doubled his huge fists and shuffled flat-footedly in.

It had been the easiest thing in the world to step out of the way of his stupid, blind rush. As he passed clumsily, David connected with his jaw, this time with a tightly clenched fist. Wishbone staggered.

Now David stood lightly on his feet, stepping aside only when his opponent got too close. His straight-arm punches connected every time. Wishbone was blinded by the blood pouring from an opened wound over his eye. His muscle-bound arms swung madly, roundhouse fashion. His slow feet refused to move him out of the way of danger.

David knocked the wind out of him. When he was helpless and gasping, he cut his face to bloody tatters. A last uppercut stretched him out in the gutter where the champion of the world lied disgustingly.

Not one wild blow had touched David. The smooth hair of his head was unruffled and he breathed evenly. Only his right hand was hurt.

The crowd had applauded vigorously. Several newspaper photographers had caught the scene. And as he and Clara had walked through the respectful, cheering mob, she seized his arm and snuggled painfully close to him. Her eyes were bleary smears of worship.

Well, he was done with that. He had seen his opportunity and had taken it, expecting Clara to offer marriage, herself, and ten million pounds. But he had not expected to be in a position to refuse all three.

At one stroke he could rid himself of a loathsome monster like her and the

hateful job of acting. His general opinion of the world was low, but never, until he had gone into the movies, had he met so many subnormonic, congenitally idiotic rotters. Now he could tell them where to go. He did not need them any longer.

As soon as he reached the telephone, he called Paris.

"This is David Belvedere," he said.

"Yes!"

The dictatorship of the World State! Not bad for a man who had never had parents—born of a test tube and a dynamo. The first thing he would be sure to do would be to do away with the Mrs. Clara Widgeys of the world. Then the other misfits and mental cripples——

VIII.

THE Council of Seven prepared to precipitate matters. But before he would permit them to rush him into anything, David waited for the five hundred thousand pounds in gold to be deposited in his name. Ten days after the telephone call to Paris, he was informed by the bank that the sum had arrived promptly.

Immediately he dropped his connections with the film company, ignoring the fact that they had spent a total of one hundred and twenty-five thousand pounds on his picture, which was only half completed. They could do nothing to force him to continue acting; he had stipulated in his terms that there should be no contract, and his association with the company should terminate at his pleasure. He left them standing open-mouthed in amazement and dashed to Paris by plane that same night.

They were ready and waiting for him.

"First you'll make a tour of the world in a special rocket plane that's just been finished for us. You can cross the Atlantic in three hours in it. You'll speak before each of the one thousand and three divisions of the organization. The event will be well publicized by our groups in the cities you're to visit. We'll probably have to turn people away from the doors. In that case the organization will take care to hold the meetings in the largest assembly halls."

"But what about the speeches?" David asked. "I can speak only English, French, German, Spanish, and Italian."

"The others will be translated for you. You can read them to the audience."

There followed exciting, restless days of constant moving from one country to another. David spoke—simply, but with tremendous restrained fire—to audiences in every nation of the world. Two months saw the finish of the affair; he spoke sometimes as often as three and four times in one night, the rocket plane picking him up immediately after his short speech and taking him to the next stop. In each city he left a deputy leader to take charge of any orders he might send.

Consider the speech he made in Paris—the first one he delivered, before starting out to conquer the rest of the world:

"Although he knew every person in the audience had seen His pictures several times and knew all the details of his private life his press agent had seen fit to publicize, he introduced himself with becoming modesty. For a few minutes he spoke about the alarming state the world was in—the wars threatening—industrial breakdown—financial ruin——

He moved his audience easily. His listeners were of the most curious mixture: artists, artisans, peasants, laborers, bourgeoisie, rich men of big business. And all were swayed effortlessly, partly by the undeniable logic of his speech, partly by their own fears, but mostly by his vast personal and physical charm.

Then, like a roll of thunder held in

check only by superhuman will, be smashed upon them his plan for the saving of the world. He spoke and men's faces lighted, as men's faces have lighted when the great prophets cried their words of fire and conquerors led cheering men to their happy deaths.

He finished.

Men stood on their chairs and shouted allegiance to the mad cause: rich overlord and his ragged laborer; artist and his despised bourgeoise. They stood and shouted until the gendarmes rushed in and attempted to break up the meeting and arrest the revolutionists.

But peaceful men, anxious to die for their new leader, broke chairs over the heads of the police, wrested their clubs from their hands and battered the gendarmes senseless. Trying to break up the meeting and arrest the audience was idiotic. The police abandoned the attempt. Like frenzied martyrs the crowd shrieked defiance, demanded to be killed.

The effect was the same wherever he went. Within two months, when finally he returned to the general headquarters in Paris to confer again with the Council of Seven, the world was ready for war.

The only thing that prevented open fighting was a simple matter. They did not know with whom to fight. The nations contained explosives within themselves. Parties of men threatened the overthrow of governments, but since the most prominent men were involved, nothing could be done to check the growth of the revolutionary movement. Helpless, the nations waited for disaster. For a while there was a brief moment of calm.

IX.

SURE of himself, confident in his power to sway audiences in every part of the world, David returned to the Council of Seven to discuss the next move. Everything so far was working perfectly. The thing that amused him most was his disinterest in the entire affair; while talking, repeating the same speech one thousand and three times, he could watch the varying emotions of his listeners.

When finally police had been installed in the assembly halls to suppress any disturbance and revolutionary incitement, they, too, were moved and joined as whole-heartedly in following David as the rest of the insane mob. He could still laugh at that.

"Now we overthrow the governments of the world," Beaumartin said calmly, smiling comfortably to himself and the seven others. "We have been remarkably successful thus far. The rest will be but a minor step."

"You have taken care of munitions and all the rest of that?" David asked.

"Munitions plants all over the world have been busy day and night making weapons and ammunition for us. We now have fifty thousand airships of all sorts; rockets, combat planes, bombers, small pursuit planes, and so on. Aircraft carriers, submarines, battleships, cruisers. We have the most advanced weapons in the world, including a number that were government war secrets. All these will be distributed to every nation of the world by the end of this week. And then!"

David gloated. The power and the glory, then, had just begun. He stood up in the huge rocket ship and stared out of the window, down at the Earth thirty miles below him. It was night, but the land and the water beneath held a luminous, beautiful quality. From above the million stupidities were forgotten; the unintelligence of the world was no more; and it became a magnificent home for a god.

This was his domain—his empire. In one week or less he would be dictator of the Earth. In one week or less fifteen hundred million people would

proclaim him supreme king. Fifteen hundred million people ready—crying—to die for him!

In one week or less!

Alexander the Great, Charlemagne, the Cæsars, Napoleon——

He alone could rule the entire world. And as sole dictator!

X.

DR. EARLE, following his exploits in the newspapers, waited patiently until David should return to England. The discomforts, the torturing boredom of his rooming house, no longer meant anything to him. He was confident David was doing this for him; preparing the world for his great experiment.

As soon as David landed near London in his rocket ship and was rushed to his hotel by the luxurious private car, he dared to call upon him. His better judgment warned him not to, but, then, he considered, it might have been his natural, impeding shyness.

David paused and deliberated a moment before permitting the old doctor to see him. He had forgotten all about the pitiful fool. Those idealistic dreams of his held no personal glory. Only the betterment of humanity.

To hell with humanity! He wanted to be a god—with the power of life and death over millions of people.

"I knew you'd let me see you," Dr. Earle said softly, gratefully. He walked hesitantly to the chair David motioned to, pulling his hat nervously out of shape.

"You don't think I've forgotten you, do you?" David asked ingratiatingly. He despised Earle for his humbleness. In his place he would have forced matters to a satisfactory point.

"Oh, no!" Earle exclaimed hastily. "I knew you were doing this for our experiment."

David was taken unawares. He almost gasped denial, but it was as good a reason as any: "I knew you'd understand." He smiled.

"Oh, I never had any doubts," Dr. Earle replied, relaxing a bit. "Only I was wondering how far you'd go."

"Not too far. Just far enough."

Earle was reassured. He nodded seriously. "Of course not! But we must be certain of our success. I'll leave everything in your hands. Only——"

"Only what?" David asked suspiciously.

"Well, I wanted to know when we'd get started creating new life."

David stood up in dismissal. "You leave that in my hands, too."

Happily, Dr. Earle shook hands and plodded toward the door.

"Wait a minute," David called.

Earle turned around.

"I want a mate. Could you make one?"

"Certainly!"

"I'll tell you when to begin, then."

He watched the old man walking with terrible slowness toward the door. And he cursed himself. The thing was carried off with the tact of a nervous diplomat, whereas he should have told the old fool the truth.

Did Earle think he was an idiot? By permitting the doctor to create new men—what was it he had said? "even more perfect than David"—he would lose his supremacy and his chance to dominate the whole Earth. That would be sheer stupidity, particularly now that he had only one week to wait for the dictatorship of the World State.

He tried to forget the matter. But he could not forget that he needed a mate. Occasionally one saw a beautiful woman one could desire, but when she spoke she had the mentality of a child without its charm. He knew he needed a fit mate, and the world held none for him. Only his creator could fashion a woman as perfect as he was a perfect man.

XI.

IN BROAD DAYLIGHT, the afternoon of December 4th, ten thousand bombs were exploded in 2,196 cities all over the Earth.

Airplanes droned across the sky—great swarms of them. All that morning the roads were busy with escaping families, dragging away their belongings as quickly as they could and packing together miles away.

Bombs flashed down upon the government buildings. The simultaneous detonation of ten thousand bombs shook the world. Huge fragments rained up into the sky and poured down again in terrible destruction.

Now the airplanes hovered, circling about the city, fighting through clouds of swirling dust. Beneath them hordes of armed men swept into the ruined cities on foot, on horse, in cheap little cars run by springs—in every possible manner. The disheartened, wounded citizens offered little resistance usually.

But London was more difficult. The bobbies gathered around Buckingham Palace, supported by the Coldstream Guards and as many of the regular army as they could muster. Outside the city, lying with full steam up, the navy waited breathlessly—waited for orders that could not come.

Scouts reported a battleship flotilla approaching the harbor. Majestically the royal fleet steamed down the river to give battle. The *Fearless*, Britain's largest battleship, ran aground and had to stand off and watch the fighting.

Seven ships of the line, four cruisers, and an aircraft carrier wheeled about and presented their sterns to the royal fleet, which gave chase. Eighteen miles at sea the unknown flotilla spread out over an unusually wide field and gave the fleet their bows, while the royal navy turned broadsides on the foreign ships and opened fire, lined almost bow to stern in a straight line—approved fashion.

The unknown fleet could fire fewer guns in the head-on position, but they more than made up for the lack by the barrage of bombs dropped by airplanes rising from the carrier.

The royal navy gave battle for three and a half hours. It was pure luck that they lasted as long as they did. Bombs of tremendous power burst the air blisters, and the overheavy ships, no longer supported by the artificial blisters, went down.

It was a magnificent sight: the majestic ships rearing and going down with all hands lined up in review formation, singing the national anthem at the top of their voices, above the roar of cannon, the crash of seas pouring into the dying ships——

In the city machine guns cut into the walls of the palace. Light artillery slammed steel at the thick, solid old castle.

Riding on a superb, shiny black charger, sword clanking at his side, but a modern gun of queer appearance in his hand, David galloped up to the ramshackle breastworks of sandbags, automobiles, and great slabs of torn concrete ripped up from the pavements. Behind him dashed the gallant, handsome cavalry.

They tore across the breastworks and into the lawn surrounding the palace, exposed to the fire of the defenders of the throne. Unheeding, they rode like madmen to the doors.

Now they separated, standing to the side of the old door. David's queer heavy gun, aimed with both his hands, blasted one terrible barrage. The door crashed inward.

Still mounted, they swept in over the press of soldiers, bobbies, and beautifully dressed Coldstream Guards, hacking to left and right with their long sharp swords. Their horses stumbled

in the pile of bodies and the slimy pools of blood.

They cut through the resisting press without mercy. The clatter of steel shoes, the whistle of swords, the slash through flesh—the frightful cries of the wounded and dying——

The old palace had heard these and more, but never in the throne room. And the insane, shrieking mob of victorious madmen running over the lawn and into the palace, trampling the dead and tearing down the walls and everything else that stood in their way——

In every country it was the same. Few defenders against millions of invaders, and bloody revolutionists could do nothing but die. The Terrorist organization known as "The" was willing to help in any way it could.

On the next day the smoke of ruin had dissipated and the work of reconstruction and burial was begun. David, supreme dictator of the World State, still lived in the Grand Palace Hotel—that was temporary—until a new home could be built for him.

XII.

IT WAS there that Dr. Earle sought him out, when the welter of blood had died down. He had fled with the others outside the city when warning of the overthrow came; now he returned aghast at the slaughter and desolation done in one short day.

Covent Garden and all the district surrounding it, including his rooming house, were destroyed utterly. He wandered about, sick with the sight of heedless ruin and murder.

His David had done that. It took him a long while to believe it. Certainly his David was no exemplar of charity and mercy; but it would take a monster of cruelty and heartlessness to effect such unnecessary murder.

As soon as he could he stumbled through the torn-up streets, around houses that had tumbled in rubble, to the Grand Palace Hotel, standing lonesome and ornate in the dust heap of London.

"David," he cried. "You promised me——"

He scarcely recognized his creation; the man of pure beauty was drunk and ugly with power. David sliced the air with his arm, cutting through silly notions of humaneness and pity.

"But our experiment——" Dr. Earle began piteously. "Are you satisfied with merely ruling the Earth? What about our mission—to raise the level of humanity?"

"Do you think I'm a fool?" David sneered. "I'm the dictator of the World State! I'm not going to give up the world for the sake of anything!"

Dr. Earle stood, dumfounded.

"Get out! Forget humanity and think of yourself."

"But, David——"

"Get out!"

The weary, broken old doctor attempted to put his hat on his head, and remembered in time that he was in the presence of the world dictator.

"I have no place to sleep," he said. "My boarding house was destroyed." He looked hopefully at David, who had turned to the heap of papers on his desk.

"Sleep here if you want. But get out and leave me alone!" he snapped.

Dr. Earle staggered after the servant who was leading him to his bedroom. He dropped heavily into a chair and sat, head in trembling old hands, scarcely believing the change.

David was a monster—drunk with power and glory.

No; he was not. He was a man, and any man in his place would do as he had done. No man could resist the intoxication of complete dictatorship of the world—the power to grant life or death to fifteen hundred million people.

He stood up shakily and attempted to

pace the room. His tired legs would not support him.

He felt like crying——

He had created neither a superman nor a god. Instead, the being he had given life to was an abnormally intelligent man, with human instincts and reactions.

A man! No more than a man!

And all his defense of the supremely beautiful creation he had given breath and life and brain to was just that—defense. The man needed no defense; he had acted as a man might be expected to act.

It was the god—the superhuman intelligence he had given him that was the trouble.

DAVID needed killing. He could not escape the thought. If [illegible] was to live, David had to die. The two could not exist together. Out of the seas of blood and the ruin of men's homes, David would create a chaos that man could not live in.

And take man's life from him, giving in return the hope of having died for the Savior. David was a man—a man born of no woman—but a man nevertheless. He was no god; neither was he a demon.

The future and the ruling of all humanity could not be trusted in the hands of a mere man.

But the world could still be saved. The one man standing in the way of greater man was David—the man he thought would help him most to aid his experiment. He would have to work alone. But he could not succeed until David was dead—out of the way. David knew he could create even more perfect men than himself. He would never rest if Earle tried to do so.

David would have to be killed! David would have to be killed!

All that day the song thrummed through his head. He could not rest or eat. His hands clenched for a weapon.

Into the corridor he sneaked that night. His room was two doors from David's. The corridor was empty. David was dictator; the world depended on him; no one would kill him. So the corridor was empty.

The old, disillusioned doctor crept silently as his protesting legs would carry him.

David slept, beautiful and untroubled by urgings of power. Slept as he had slept eleven years before, when he knew no life and was a flawless statue carved of flesh and filled with synthetic blood.

Skillfully Dr. Earle cut his white cable-muscled throat, though his hands shook with pity and self-disgust—cut it with a pilfered bread knife.

His creation lay still, soaking the bed with artificial blood. Once more he was lifeless and perfect—lovely and strong in death as a statue.

Dr. Earle huddled into a chair and stared down at the red knife.

He could not succeed. His experiment was always doomed.

Man cannot create a god.





Outclassed!

Dear Editor:

The April Astounding contains the best theme to date, the greatest group of stories in the magazine's history. The beginning of *The Encircling Sargasso* surpasses even *The Mightiest Machine*, which in my estimation is saying quite a bit. Yes, D. George Frederick is quite a find. See that you keep him. I think *The Lotus Eaters* can be considered Wellman's best so far. At least it was a breath of a story. Isn't *Age a bit out of date?* A Brooklyn scientist combined two compounds of heavy oxide (D2O) without harmful effects—at least so far. How then could New York's water supply be harmful with just one twenty-thousandth part of heavy water?

The short stories—well, it's mighty hard to say that one is better than the other. They all represent the authors at their best. Hart Stevens' suspense followed in *Frontier of the Moon* Islands.

The 'work of Dold and Marchioni is fine. I didn't care much for Brown's cover though. It doesn't stand out well. Brown's fault is his covers. They should be brighter. Please try Dold on the cover. If his covers are as good as his drawings you should alternate him with Brown. To complete your fine staff of illustrators you must get Frank R. Paul.

Astounding Stories has outstripped all science fiction magazines. It has outclassed most all pulps. It deserves to be in the most magnificent large size with trimmed edges. Number of pages? Ninety-six. Price? Twenty-five cents. With smooth edges you should do away with margins on the illustration pages thus giving still larger pictures. I believe this has never before been done in pulp magazines. Color covers for the illustrations would also help the magazine to stand out above all other pulps. Well, how does it sound? Jack Darrow, 4224 N. Sawyer Avenue, Chicago, Illinois.

Too Much Science!

Dear Editor:

I have just finished the April Astounding Stories. It was fine. But why don't you give us more of the old type stories. That thought-variant idea of yours is O. K., but your authors use technical terms that the average layman doesn't understand.

For example: *The Irrigator*, *The Airport Of Tomorrow*, and many others.

Wesbarnes is a real author. He creates characters and plots of the old-time Astounding Stories. (Don't you worry?) Any man can read a textbook conversation various theories, etc. Moreover, Astounding Stories readers want more human interest and more exciting action—not 5% fiction and 95% science composes a good story.

More interplanetary wars and exploration. Medical and similar stories are welcome. *The Mightiest Machine* was an excellent serial, even if it was more or less technical.

Hoping for more fiction and less science, I remain—Henry Hott, 4349 Grace Street, Chicago, Illinois.

Invitation!

Dear Editor:

As a reader of our magazine from the very beginning and as a fan and collector of science fiction, I am respectfully requesting you to publish this letter. For I merely wish a method to inform your readers of the continued existence of science-fiction societies that are unconnected with any commercial organizations.

In years past there used to be many such but times change and some things grow old and pass away. No more is there a Science Correspondence Club, no more an International Scientific Association, no more a Science Fiction Fraternity, no more the Interworld. All these are dead.

To-day but two remain. Over the oldest of them all, dusted from even before the days of the first all science-fiction magazine. That is the Terrestrial Controversy Guild, which was the International Science-Fiction Guild and before that far, far, back was the little Impossible Story Guild. This stands today, free, unhindered by any business concern, unbiased and by any bonds that would destroy its right to live—ever for the betterment of fiction.

We wish to say to all who love the reading of science-fiction, to all who wish to see it better and greater than it has been, to write to us. Write to our general manager, Wilson Shepherd, Oakmont, Alabama. We want to hear from all of you. If you have any ideas don't hesitate to let

as holds them if they will better science-fiction in any way.

And what is this other society of which I spoke? That is another that has proved itself worthy to the last. I refer to the International Cosmos Science Club. An organization of science enthusiasts designed to further correspondence between other enthusiasts all over the world. It gives an opportunity to all to make known their things in science and experiments. It gives an opportunity to all to air their own pet theories and defend them. And it is working hand in hand with the Terrestrial Fantascience Guild program. Together we strive to further science and further fiction. To all interested in the scientific angle write to the president of the I. C. S. C., William R. Sykora, 2151 61st Street, Long Island City, New York. Remember, if interested in the fantasy angle of science-fiction write to T. F. G. If interested in the scientific side, write to I. C. S. C. and please inclose a stamp for your answer.—Ingald A. Wollheim, The Terrestrial Fantascience Guild, 501 West End Avenue, New York City.

Hash, Wheat, and Chaff!

Dear Editor:

I've just finished reading Brass Tacks in the April Astounding and found it chock-full of interesting letters. I can't resist the urge to comment on some of them, so here goes:

William R. Sykora expresses my sentiments on Weinbaum's stories to a T. Those little footnotes the author puts in make his stories still more realistic.

What's Jack Wilson bellyaching for the good old days for? The stories in Astounding today are at least their equal. Mr. Binder, how could you put Binder on an equal with Weinbaum? Weinbaum's stories are beautifully written; *The Spore Doom* is one of the worst science-fiction stories I have ever read.

T. Gingo's letter reminds of ye good old hash to me—

And now for Harold Keating's list of the so-called kings of science-fiction. Binder—rotten; Brown—not writing; Flagg—gets a new yarn; Gentle—as bad as Binder—he also has the distinction of writing one of the worst science-fiction stories I have ever read—*The Vengeance of a Scientist*. Hamilton—not so hot; C. W. Diffrie—Astounding could use her stories; Jarvis—writes weird fiction; Keller—his first stories were good, but he's grown progressively worse; Kirk, Kummer and Stone—fair; C. A. Smith—writes childish fairy tales disguised with unintelligible words of his own invention. Verrill—good. Can't you get him, Mr. Editor? H. K. Wells—fair. The others on Mr. Keating's list are contributors to A. S. and I think our magazine has done a pretty good job of separating the wheat from the chaff.—Richard H. Jamison, 3161 Dresden Avenue, St. Louis, Missouri.

Beware, Professors!

Dear Editor:

I am amazed to see that Karl van Kampen can now add a chemist to the list of four college professors of physics and three M. I. T. graduates who are stuck on his story. Tsk, tsk, Mr. Ima Chemist, I'm surprised at you.

Now let's consider Mr. van Kampen's arguments. According to him, if shooting of 1 pound of fuel will increase the speed from zero feet per second to 1 foot per second, the same amount of fuel will increase the speed from 1,000 feet per second to 1,001 feet per second, or from 1,000,000 feet per second to 1,000,001 feet per second. Pardon. Correct. Now, says Mr. van Kampen, if we calculate the kinetic energies of the rocket before and after shooting off the fuel and take the difference, then we get the work which the fuel does. Let's do that for a rocket of mass 1,000 pounds, using the formula $K.E. = \frac{1}{2}MV^2$. We get:

SPEED	KINETIC ENERGY
0	0
1	500
1,000	500,500,000
1,001	501,001,500
1,000,000	500,000,000,000,000
1,000,001	500,001,000,000,500

Hence, at rest, 1 pound of fuel does 500—0 or 500 foot pounds of work. At 1,000 feet per second, 1 pound of fuel does 501,000,500—500,000,000 or 1,000,500 foot pounds of work! At 1,000,000 feet per second, 1 pound of fuel does 500,001,000,000,500—500,000,000,000,000 or 1,000,000,500 foot pounds of work!!! Boy, what a discrepancy! No wonder rocket travelers get space sickness.

However, and here's where I shake a responsible finger at the college professors and M. I. T. graduates and Mr. Ima Chemist, the question raised by Mr. van Kampen is a well-known one. It is asked and answered on page 228 of "Theoretical Mechanics", by Sir James H. Jeans—Gina & Co—though in slightly different form. According to Sir Jeans, we must not forget to take account of the gas that is shot back when the fuel is shot off. To speed up a 1,000 pound rocket 1 foot per second, 1 pound of fuel would have to be shot back at a speed of 1,000 feet per second relative to the rocket. Also, we mustn't forget that before shooting off the fuel, the rocket has a mass of 1,001 pounds.

At rest the 1,001 pound rocket has zero kinetic energy. After shooting off the fuel we have a 1,000 pound rocket going forward at 1 foot per second and 1 pound of gas going backward at 1,000 feet per second. The K. E. of the rocket is 500 and the K. E. of the gas is 500,000. Hence the pound of fuel actually does 500+500,000=0 or 500,500 foot pounds of work.

Now consider the 1,001 pound rocket traveling at 1,000 feet per second. The K. E. is 500,500,000. After shooting off the fuel the rocket is going one foot per second faster and the gas 1,000 feet per second slower. Hence we have a 1,000 pound rocket going 1,001 feet per second and 1 pound of gas at rest. The K. E. of the rocket is 501,001,500 and the K. E. of the gas is zero. Hence, the pound of fuel actually does 501,001,500+0=500,500,000 or 500,500 foot pounds of work.

Now consider the 1,001 pound rocket traveling at 1,000,000 feet per second. The K. E. is 500,500,000,000,000. After shooting off the fuel the rocket is going 1 foot per second faster and the gas 1,000 feet per second slower. Hence we have a 1,000 pound rocket going 1,000,001 feet per second and 1 pound of gas going 999,000 feet per second. The K. E. of the rocket is 500,001,000,000,500 and the K. E. of the gas is 499,000,500,000. Hence the pound of fuel actually does 500,001,000,000,500+499,000,500,000=500,500,000,000,000 or 500,500 foot pounds of work.

The net result of this mess of figures is that 1 pound of fuel always does 500,500 foot pounds of work and energy is conserved no end.

In the face of this conclusive Mr. van Kampen's story is rather silly. But it is still a good story because it made so many people who ought to know better look silly and reminded them that there are things, even in their own specialty, that they don't know.—I am again taking a dig at the four college professors, the three M. I. T. graduates, and Mr. Ima Chemist.—M. J. Lofting

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It's diplomatic policy not to mention names.

Dear Editor:

I'm not going to tell you that I've been reading Astounding Stories since it gave its first lusty howl and this is the first letter I am writing to my favorite science-fiction or any other

kind of magazine. I'm not going to tell you that I think Astounding Stories is the acme and that you should continue your fine standard. I'm not going to ask for a quarterly or that you remove the wire staples. Nor am I going to say that Aye is the best heavy water story I have read since the market was designed with them—it really is—and that *The Nightlife Wanderer* is equal to *The Skylark in Spell-binding ability*. No, I won't tell you any of these things. Why the devil should I? You will have received by the time you get this so many letters telling you, asking you and cursing you that you will be and no doubt already are disgusted with the brand of half wit readers you have gathered to your standard. Present company is not excepted.

I have only three words for Karl van Kampen, and they are: "Note to you." You can't really blame the editor. Imagine any one loving the gall to start an argument like the one you let sneak into your Brass Tacks. I've seen quite a few arguments in my time but this takes the cake. Remember the one between Dr. Smith and Miss Keab in Amazing Stories? And then there was some bitter and unnecessary argument about the existence of a deity in Wonder Stories. Says I, if you are bent on printing these letters why not hold off until they are all in, and then print them all in one issue so as to allow the readers like me, who read the stories for enjoyment and not to pick holes in them, to steer clear and then to start reading Brass Tacks again? I could probably dish up some hooey that would start an argument with formulae flying hither and thither and yon, and I have no doubt that every one of your readers could. But do you think I did, will or intend to? Those things are only fit for discussion where the arguments are all drawn out over a long period of time, like in a readers' department of a magazine. So, Mr. Karl van Kampen, I vehemently cry(e), "Note to you!"

I see by the letter you headed "For the Good Old Days," Mr. Wilson says he would like to return to the old blood and thunder stories. Honestly, when I look back and read some of my older magazines I feel like ceiling it all. Now don't get me wrong—I mean reading this period of reading science-fiction.

I don't often read Brass Tacks all through especially now that this cantankerous ball is being slung about, but I have noticed that Mr. Wilson has mentioned a letter from a fellow I haven't seen since I graduated from high school. If it's all the same to you, Mr. Editor, I'll say, "Hello, Isaac." If it's all right I won't get sentimental on you again.

To continue without that same letter, I really don't blame Mr. Wilson. It isn't really his fault. Maybe he was dropped on his head when he was a baby. I don't see how any reader of Astounding Stories, as she is to-day, could want a return to the old stories.

Which brings me to the topic of the afternoon. When I see sentences like, "I have long contemplated on which of the three magazines of science-fiction I hold highest in my opinion. One was really cherished . . . and the other 99.99% perfect," it burns me up, it does. That was written by Winston Harwood. Here's another. "I would not lose an issue of the other magazines, as good stories are found in them also," by E. W. Hunter. Then again, "I sure get mad when I hear or read about another science-fiction magazine bragging about how good their stories are, and how much reading matter the magazine contains, when I know it isn't true." This was by Bill Barclay. I think by now you're beginning to get the idea. If you're not, you're awfully thick. Don't mind me; that's just my childish enthusiasm. It always makes my blood boil to read sentences like those I've just quoted from letters in the April issue.

Those mirrors of backwardness and narrowness I utterly despise. Instead of hiding behind phrases like "your rival," "another magazine," sometimes "your enemy" and "your Nemesis," why don't your readers—they must have some sense or they wouldn't read science-fiction—come right out in the open and name names? Nobody's going to bite you.

I am glad to see that the director of the Brooklyn Chapter of SFL has no such qualms. Maybe the reason for it lies in the fact that he's been reading science-fiction off and on. In that case it is quite probable that he never saw the letters in some magazine. I don't recall which, where, and in favor of the name of the competitor, adversely were printed. This is by no means the first letter I've written on the subject.

I humbly beg your pardon. I've fallen out of character, haven't I? I started out with the supreme and superb idiocy of a magazine reader and ended up close to an invertite. However, the circumstances justify it.

Wollheim is a no-good plagiarist. Tucker is a moron. What does that make Wollheim? If the high contributors want to make something out of it, my address is below. If this doesn't get to Brass Tacks it won't make any difference anyway. No, I'm not a member of either organization.

I see Long is still the pessimist. I've read *Triple Geared*. As usual, Coblentz is head and shoulders above any other short—I mean short and not those miniature novels—story writers. Too bad you couldn't get Stanley G. Weinbaum to write one about "three cheers for" the Martian setting. I'm sure Oscar will prove quite as good, though. I don't expect to read *The Fourteen Keepers* until I have both parts. You never can tell, though.

I'd better call a halt before I start writing about monolight and rosco.—Harold W. Kirshbaum, 929 New Lots Avenue, Brooklyn, New York.

Sense Versus Science!

Dear Editor:

I didn't write last month because there wasn't much to write about, but this month is quite the opposite. I first want to reply to Bernard Kaffel. I am disappointed that it was not possible to print my reply to van Kampen's reply to me, as it would have saved me a lot of trouble. I don't feel like repeating what I said in that letter, and I don't think I could if I wanted to. However, I believe that Brass Tacks has supported me admirably, and though I can't follow the equations I get the general idea.

It was only a hypothesis to say that the only physics I knew was what I learned from science-fiction magazines. I do know some fundamental stuff and, as a matter of fact, I think I know more abstract fiction than the other kinds. I don't think I could tell Einstein anything. I am a great supporter of him, though I do not hesitate to question anything that doesn't seem reasonable to me. Enough of that. I believe that people more competent than I have proved the argument to everybody's satisfaction, and the *The Irrelevant* is entirely discarded.

However, we have another story in this issue which calls for criticism, and as this is about chemistry, I am sure that I can handle this. I am taking chemistry now and, incidentally, for Mr. Kaffel's information, that is the reason I have not had players yet.

For a while I thought that C. C. Campbell was John W., Jr., in disguise, but after the terrific errors in the story *Aye*, I am sure that it is not J. W. In the first place, C. C. does not know what heavy water is. Since when has water been regarded as an element, having isotopes and valence? And since when has it been possible to change the atomic weight of an element by merely adding electrons at random? What are you going to do for protons? And I wonder what difference there is between the formulas H_2O and HOH_2. About the only thing right in the story is the method of preparation, and the fact that heavy water weighs one tenth more than ordinary water, and the difference between the boiling and the freezing points. And, by the way, that is one point where he contradicts himself. He says that heavy water

can't be removed from ordinary water by distillation. By virtue of the different boiling points it can. And that is one of the methods of preparing it. And the light water is entirely preposterous.

Enough for criticism. Here are the real facts. Heavy water is water which, instead of two atoms of hydrogen, has two of deuterium, an isotope of hydrogen having an atomic weight of two, instead of the normal one. Since you can't have an atomic weight less than one, the light water is impossible. Heavy water is expressed by the formula D_2O. The method of preparation depends upon the fact that all water has a slight percentage of heavy water mixed with it. Or, to be more exact, all hydrogen has a small percentage of heavy hydrogen mixed with it. That is what makes the atomic weight of hydrogen 1.008 instead of 1. The heavy water does not electrolyze as readily as ordinary water, and has a higher boiling point, and thus, by a series of electrolysis, or distillations, a small amount of heavy water is procured. I recently read that a man drank some of this water without harmful effects, so far.

I liked *The Mad of May*. It gave me a funny feeling like when I read *Alice in Wonderland*, or *Through the Looking Glass*. If such things could only happen! I got the same feeling when I read Charles Fort's sentence: "The man walked around the horse."

Life Channel was very good, with a new idea. *The Nightwit Murders* ended expertly. Campbell and Smith have always been my two favorite authors.

Hari Kharat should be shot for ending *Frontier of the Wastelands* so abruptly. A whole book could be written about the adventures of a creature like that. Let's have him back. He's still young. And give him a decent name. And perhaps a wife.

The Lotus Eaters introduces some new ideas, while *Purple-Crowned* is a rehashing of an old one. Can Caldwell be getting stale? Little with *The Emotion Express*. They were talking about relativity as object a few million times. What were they going to make it out of? According to the Einstein equation, $e = mc^2$, it runs into some fancy figures. Something like twelve numerals for one gram of matter.

Although the authors may not like it, I got a sort of devilish fun speculating stories like that. As Doc Smith says, it puts bubbles in your think tank. And I hope it puts some in the editor's, too.—Milton A. Rothman, 2300 N. 54th Street, Philadelphia, Pennsylvania.

The Shadow of Doubt

Dear Editor:

If time and space will permit I would relish the idea of passing a few helpful hints to Hoy Ping Pong Tucker! There's no personal grudge involved. It's just that Hoy gives me the itch! Going about this matter in an orderly and wholly respectable manner we find the following to be true about Ping:

Ping claims that he really is intact! Now I ask you in all that Tucker has had printed in the way of silly, clattering evidence, what evidence is there to stack up to Hoy's claim to sanity? Time and again has Ping been rebuked by friendly letters in Bronx Tucks—to what avail? Wholesome missives from Ping's drooling pen continue to litter the pages month after month. Are we to suffer the horrors of frame more of Tucker's babblings? I pray that my plea is not to be in vain, O father and ruler of Bronx Tucks!

If Van Kampen and his opponent must keep up this eternal beef along; nothing, please print their battle in a separate edition which we readers may buy if it behooves us! I get sick of seeing valuable space wasted on two fighting children whose vocabularies are too big!

Back to the good old magazine. If you have waded through all the foregoing, Astounding is doing it K. You are certainly pushing it out! A host of good authors under one roof is worth paying twenty cents for! Glad to see John Taine is back with us! Yours for less Tucker!—Fred Anger, 2700 Webster Street, Headquarters Anti-Tuckerites, Berkeley, California.

Idea!

Dear Editor:

My chief reason for writing this letter is to give Frederick a pat on the back for his excellent story. I sincerely hope a sequel is planned! Dale's handling of the first illustration of the second installment of this story is remarkable. Whatever you do, don't let go of Dold, Brown, or Marchioni.

Binder, Gallun, and Stuart should be proud of their last stories, especially Gallun. I've an idea I must get off my chest, so here it is: Why not have a ballot or something of the sort on which the readers could vote as to what they considered the best story of the year? This could also be applied to interior illustrations. A prize or emblem of some sort could be given to the author and artist whom the readers select.

Why not let us know if you are planning on getting Astounding out twice monthly? I am glad to see that a story by Hamilton is coming. A few authors I'd like to see are Mr. Keller, P. Schuyler Miller, Gawain Edwards and a long novel by Stanton Coblentz.—Chauncey Ellsworth McCormick III.

Worthwhile Plus Well Meant!

Dear Editor:

Although I have just read two stories in the May issue, I do not hesitate to claim that it is the best yet. Never before has such a galaxy of prominent authors and interesting stories been brought together inside one cover. Moreover, there is a larger number of stories than ever before. I remembered the April issue without fear and now it has met its equal or superior.

The first installment of *The Emotion Express* impressed me very much. I read it with thorough enjoyment and it remained in my thoughts afterward for some time. Then I read the second installment and that quality which had so captivated my interest seemed missing. I do not know why. I wonder if any other readers had the same experience. In spite of this it was a great story.

The Lotus Eaters is a real classic. Oscar is comparable to the hitherto incomparable Tweel. Please bring Him back in another story before his race is killed off. I hope Weinbaum continues his series. A few good series help a magazine a great deal. Also I would like to see more of C. L. Moore's work. *The Bright Illusion* was an unequaled story of fantasy. *Age* was another outstanding story in the April number.

As to the artists, I would prefer a continuance of the scheme used in the April issue. Let Dold illustrate the longer stories and have two illustrations for each. Then Marchioni can do the illustrations for the shorter stories. He was very good in April except that in the picture for *The Time Perishers* he included a little too much detail and detracted from the effectiveness.

His interpretation for *The Mad Of May* was a masterpiece. Dold was very effective in illustrating *The Emotion Express*, especially the last installment. The picture was utterly different and superb. He fell down horribly, however, in his drawing for *Age*. I wish you would experiment with a Wesso cover.

When you announced that you had contracted for a story by the one other outstanding master of science-fiction, I tried to imagine who it could be. I thought of at least three who were certainly masters. They are A. Merritt, Edgar Rice Burroughs, and John Taine. I did not enjoy *The Time Stream*, but I hope the new story is better. But surely you could get something from

those other authors, too. I am glad to see Binder in your pages.

Do not publish your magazine semi-monthly. An increase in quantity can only mean a decrease in quality. Instead, publish a companion magazine—not necessarily Strange Tales. My suggestion is that you obey your readers' requests for a science-adventure magazine.

Many read science-fiction for the marvelous adventure depicted; some read for the science. Therefore, you could satisfy both types. And I predict that you would have largely the same family of readers for both. If you feel now that you cannot accept stories by Hamilton, Kline, et cetera, this new magazine would be an ideal medium through which they could express themselves. Burroughs, Kline, Jones, Williamson, Schachner and many others could write a portion of their stories for this magazine.

I do not mean that the stories should be of the blood-and-thunder type found in some magazines which profess to print science fiction. You would naturally insist upon a high literary quality in the stories. I simply mean that the emphasis would be on the adventure and experiences of man in strange dimensions and on strange worlds. Interplanetary stories are largely of this type, anyway. No long-winded scientific explanations will be necessary. You can garner hundreds of readers by securing "Hawk Carse" and "John Hanson."

Please consider this proposal seriously. The magazine would be printed monthly and would feature the best authors of the adventurous type of science-fiction. With it you can broaden your circle of readers. Through it, many will become acquainted with Astounding Stories. Do not go semi-monthly. Try my suggestion instead.

Other magazines have almost stopped printing interplanetary stories because they say that good ones are too scarce. Yet Astounding goes ahead printing such recent masterpieces as those by Smith, Campbell, Kelly, Leinster, Gallun, Frederick, and so on. You are leaving the other magazines in the field far behind. Congratulations! And thanks for reading this long letter, which I believe contains some worthwhile—at least well-meant—suggestions.—Donald Atterson, 707 E. Madison Street, Springfield, Massachusetts.

Sir Edward Replies!

Dear Editor:

I fain, a sprightly and courteous gentleman indeed is Sir Percy Westerton! His first lusty yawn at me elevated away cravon and plume, knocked out several expensive front teeth, and wrought havoc, grievously and generally, to my person and pugnacious armor.

All of which is by way of admitting that he has thrown me for a loss on the second of the mathematical impossibilities to which I pleaded guilty in the foreword to *Skylark Three*. In extenuation, I can only repeat what I have said before—that in such an early stage of development of the first *Skylark* and of the type that story was written (1914-1920), I simply could not introduce the subethereal devices which would have in all probability been necessary for riding while traveling at velocities greater than that of light.

However, battered and gory as he is, old Sir Edward shakes the bloody, unkempt gray locks out of his eyes, polishes up his armor as best he can, and takes a couple of wallops at his challenger, that:

1. Have you not learned, valiant Sir Philip, that it is not permissible to extrapolate an empirical formula beyond the limits of actual observation? For upon you, young sir—it was exactly such extrapolation that was responsible for the collapse of the Quebec Bridge; and the Dogging Triangle is fully as empirical as are the stress-strain formulae of our brethren, the mechanical engineers. Therefore I answer your question with a large and emphatic No! The frequencies admitted by the flights of the *Skylark* would not mount up into cosmic rays, et cetera. I cannot prove, mathematically, that they would not; but I defy you to prove, by any real mathematics you please, that they would.

2. I carefully pointed out that the atomic material of the lens was not pure neutronium; but simply matter from whose atoms electrons had been stripped to produce a certain density. In your contention that no heat would be present in such material you are not fighting the weak and palsied arm of science and decrepit Sir Edward—you are locking horns with the mammoth and all-powerful might of Jeans, Eddington, Millikan, and all other competent knights with whose work I am familiar.

In this connection, please see "Fath's Elements of Astronomy," page 343, from which I quote verbatim:

"... intense heat in the interior of the star ... has stripped the atoms of most of their electrons ... permitting enormously greater condensation ... central temperature rises to the standard of forty million degrees. ..."

There! If that stout didn't knock you into an outside loop I think that the referee would mercifully stretch behind you to see what's holding you up!

And talk about straining at a gnat and swallowing a camel! To pick out two such seasoned table potato to throw, and then to go on and say that there is nothing much the matter with——

But old feeble Sir Smith has fainted. Quiet, Dr. Watson, the gentle!—Edward E. Smith, 23 Kippen Avenue, Hamilton, Montana.

Attention, Dictator Tucker!

Dear Editor:

Allow me to congratulate you on the splendid progress Astounding Stories has made since Street & Smith took it over, and since you became editor.

Imagine having stories by Taine, Fearn, Cabbell, Binder, Woodard, and Gallun all in the same issue. In the older days of our worthy magazine I would never have believed it possible, but lo and behold! It has happened in the May, 1933, issue of the new Astounding Stories.

Allow me also to congratulate you, Mr. Bob (Dictator) Tucker on your marvelous idea, the SPEWSPAPER. I am a loyal follower!—should you accept Chinaman Metcalfe's challenge, I'll agree to be your second providing you send he over to California and provided your very esteemed and noble friend, Hop Ping Ping has not already volunteered to perform this noble duty. Although I am fully in favor of your idea, I do believe that the flavor of gum used for binding should be changed every three months instead of every six. This way the readers would not become tired of them.

And now to you, Mr. Editor: Let me congratulate you, not only for the authors you have retained, but the swell stories you have succeeded in obtaining. One thing, however, I disagree on, is the artists. I still believe Wesso should do the covers.—Phillip McKernan, Amateur Radio Station W6ITW, San Mateo, California.

That's What Counts!

Dear Editor:

Looking over your last few issues, I have been impressed by the steady improvement of the magazine. The best authors are the two Campbells, E. E. Smith, Stanley Coblentz, Harl Vincent, Murray Leinster, Ian A. Stuart, Nat Schachner, Raymond Z. Gallun, Stanley Weinbaum, Donald Wandrei, J. M. Long, Jr., George Frederick, and John Russell Fearn.

I think that the earlier stylers stories by E. E. Smith were excellent, but I believe he went too far in *The Skylark of Valeron*. The evil

many readers picking up the story would be completely bewildered by it. Of course, the true science fiction fan could easily follow it, but I am afraid it would scare away any potential readers. The same is true of the avowed Cosmos story by Wandrei. It is very hard to follow. I don't like Frank Belknap Long's stories, because as far as I can remember, none of them have ended pleasantly.

The best stories of the last eight months, in my opinion, are as follows: *The Shipkeeper of Valeron, The Mole People, The Mightiest Machine, The Irrelevant, Old Faithful, Flight on Titan, Forensic Finger, The Lotus Eaters, Dwarf Men of Ethne, The Machine, Ultimate Metal, Freeborne Crafteers, Wind of the World, Telepathic Tyranny, The Electric Express, The Blue Earthman, Tropic Ground, Frontier of the Wastelands, Spy, Earth's Monstrous, Twelve Eighty-Seven* and *The Escape*. I wonder how many readers would agree with me. I liked *The Mightiest Machine* better than *The Shipkeeper of Valeron*.

As so many other readers have said: "Theory on letters about wire staples, rough edges, pictures, bad print, better paper etc." It's the stuff inside that counts. By the way, what happened to the pit movie plan. Are you going twice a month?—Richard Creecy, 6 Upland Road, Baltimore, Maryland.

We Have Hamilton, Binder, Tuse, Cabiests and Williamson!

Dear Editor:

Congratulations, Astounding! You have reached the peak of scientific fiction at last! You have the best authors. Not only that, but you have Binder, too! Believe me, you've got a good artist in Binder. He can draw, and how!

I have just finished the March issue and think it is superb. *Wind of the World* takes one back to the good old days. I can hardly wait for your next.

Going back to the artists, here is something that has been worrying me. What has happened to Wesso? Where is he? Is he dead or what? If not, why has he gone? Also, look here. I thought this would happen and it has! You are giving Dold too much work. Get Paul to help. And for goodness' sake, drop that dreadful Blatant man, Brown. His hopeless. His drawings reminded me of a donkey with paint poured over it. To my knowledge he has done just three covers that are passable. May, 1934, August, 1934, and February, 1935. Get Paul for your covers. He is an artist!

Incidentally, I have found three new regular readers. I just showed your Nicht Star Ship Invincible and thereby He burst! If you have an science-fiction fans bring out a semimonthly, an annual, and a quarterly. And give us an English edition. The prices charged by booksellers over here for Astounding are shameful!

In the March issue there was a mistake. The illustration for Gallun's *Telepathic Tyranny* was noted as Elliott Dold's but was signed M. Marchioni. Now swallow this one! Why in heaven's name haven't you got the following authors on your list: Clark Ashton Smith, Edmond Hamilton, Laurie Binder, Jack Williamson, Stanley Grahame, David H. Keller, G. F. Speir, John Taine and Ray Cummings.

If we can't have these give us more of Nat Schachner's thought variant stories.—Francis L. Ellsworth, 6 Cardigan Road, Richmond, Surrey, England.

The Search for Tucker!

Dear Editor:

I will make my letter as short as possible so you can find room for it in Brass Tacks. The May issue of Astounding Stories shows a great story has been taken since you have taken the reins over and the cover is something to shout about. Laurie Binder has set forth an altogether different theory about space and it will start us to thinking seriously about it. And let us now have some more two-part serials, they are very good.

And now for this fellow Tucker. Who gave you your dictatorship in the first place? And second, what is all this nonsense about pulling stories out of our magazine, and substituting chewing gum? If it is chewing gum you want, I think the drug stores can supply your needs. And in conclusion, let me say this much: I think your keeper is looking for you so you had best go quietly with him and not cause any more disturbance. That is all, Mr. Ed., and thanks a lot. Yours until the feet of the stars kiss a hole in the seat of space.—Ross Wilcox, Jr., R. F. D. 2, Box 10A, Chesterfield, Missouri.

Another for Taine!

Dear Editor:

Well, he's back! John Taine is back again after a long absence. From the looks of the first installment he's back with a darn good novel. Please, whatever you do, don't stretch it out to six parts. Have pity on us readers. We can't read it in one place as you do. I've read all of Taine's magazine stories, one book, and have four more of his books on hand to read. I know he is an author who is worth retaining; an author who has not only scientific ability, but also excellent literary ability as well. How come he was given no cover? You didn't even have his name on the cover. Hari Vincent's was there with no story inside.

Earth's Monstrous takes the cake as far as the complete stories go. Nice idea, nicely written, nicely illustrated. The conclusion of *The Electric Express* was very good but very breathless. I would be interested in a sequel. *Set Your Course by the Stars* contained an idea truly thought-variant. It has never before been used. Nicely written, too. How soon do we get more Binder? *The Whisperers*, by Donald Wandrei, also contained a unique idea. Story was interesting reading but I didn't quite get the point. What do you mean by calling *Escape* a novelette? It was a nice short as were *S'Gee* and *An Episode in Space*.

Dold and Brown continue to turn out good work; Marchioni is improving. Can't you possibly add Paul to your staff?

I notice that the calls for a quarterly still come in. Come on, let's have one. 160 pages in a large size. One or more book-length novels, plus novelettes, and shorts. Profusely illustrated by Dold, Paul and Marchioni. Friend Sir speaks.

John Taine far from complete on the list. You have yet to get A. Merritt, and also Edwin Balmer and Philip Wylie—those two authors of *When Worlds Collide*, which was one of the few best sellers in science-fiction books.—Jack Darrow, 4224 North Sawyer Avenue, Chicago, Illinois.

The Experimental Friend!

Dear Editor:

I want to correct some views on space travel. I have a friend who went duck hunting with two other men. There were no ducks so he decided to shoot fish. He poked the gun barrel about ten to twelve inches into the water to get close to a fish and pulled the trigger. It was a 10-gauge shotgun. He was hurled clear out of the boat and has had a lump on his shoulder for two years now. The gun barrel burst from water like up to shell, flattening right out. Had my friend been completely submerged with his gun, it would have gone through his shoulder, using the same as dynamite placed on a rock. It bursts the rock because it cannot move the air fast enough.

And now let's get my friend in a tank ten miles square, compress the air to just a little

below the liquid state. The egg would hit with a little less violence than if he was in the liquid, and the lower the pressure got the less thereof the hit, and when a vacuum was reached he would feel no hit at all. The mass of the fish would be more than sufficient to absorb the shock in a vacuum.

Now let's change the scene to a space ship a million miles from nowhere. Let's assume space to be a vacuum and that the ship is stationary. My friend is at the throttle, giving her the gun. The flame would shoot far out into space, the distance being controlled by the gravity of the ship. He gave the rocket a short blast and no more. While the flame went as far as the gravity of the ship would permit, they then returned to the ship and formed an atmosphere around it. Everything in space has an atmosphere—all its gravity can hold. The moon has its atmosphere inside.

Space travel can only be accomplished by producing an artificial gravity, and I could produce such a ship if I had the money. Rockets are only good for driving boats and planes.

And Still They Come!

Dear Editor:

Mr. van Kampen has at last said something slightly sensible ——: If the ship is traveling ten feet a second, relative to Earth and the push is one thousand pounds, then those ten pounds of fuel did ten thousand foot pounds of work. But if the ship just happened to be traveling at the rate of ten miles per second, then those same grams burning at the same rate, in the same way, did 5,280,000 foot pounds of work!" That is the problem supposedly under discussion. Shall we confine our discussion to that problem for a change? Fine!

If the first statement were true, the second would follow, but it isn't. If the ship is traveling ten feet per second relative to Earth and its push is one thousand pounds, then the ship cannot maintain a constant velocity of ten feet per second. It cannot maintain any uniform velocity. Any expenditure of fuel energy will produce a change. The ships will accelerate, it will decelerate, or if you like, it will loop the loop. For, being free of gravitation, it requires no energy to maintain whatever velocity therewith you choose to endow it.

Every motion's out of those ten thousand pounds of push would be employed by this change, which would depend on the inertia of the ship, and would continue so long as you pushed. If the change were acceleration the ship would eventually attain a speed of ten miles per second, or any other velocity short of that of light, no matter how much or how little energy were expended. Mr. van Kampen could save fuel by taking through the rocket tubes. Gas is gas.

The ship's velocity relative to Earth has no significance. Or at any rate no more than its velocities relative to the Moon and Alpha Centauri. If their gravitational influence to overcome some of those has any bearing on the [illegible] of the solution. The ship is traveling ten miles or half an angstrom per second, anything you like or it is standing still. The problem, if problem it is, remains the same.

About the little problem of the automobile and the catapult. It points, in effect, to the startling fact, that doubling speed quadruples energy. I don't know what the first catapult was for. Now, I have a hardly original way of expressing the same thing, and if I may say so, I think it is rather cute.

$$K.E. = \left| \frac{M V^2}{2} \right|$$

How cute? Well, I didn't determine the units of energy which are arbitrary. They were established a long, long time ago, and both Mr. van Kampen and I were too young to have been consulted. But he is quite at liberty to experiment with the above formula, whether he does it with automobiles and catapults or mirrors.—J. P. McCormack, No. 226, Capital Apartments, Olympia, Washington.

Interplanetary Coming!

Dear Editor:

After reading the concluding installment of *The Fourteen Engines*, I, extremely disappointed, decided to write this letter. Part I was well written, and I eagerly awaited Part II; but what a flop that was! The main fault is that it is literally full of scientific explanations, in which no one but a scientist would be interested anyway. Ditto for the last installment of *The Nightmare Machine*. However, since the latter was excellent up to the end, and I guess that every one has different tastes even in science-fiction, let's forget it.

As long as every one is giving his or her view on the interplanetary question, I may as well give mine. My answer is no. While, at the present time you may have enough good stories for two magazines per month, I doubt that you will continue to have.

Interplanetary stories seem to be monopolized by their absence. Any true science-fiction fan would rather read one good interplanetary story than five of the type which now crowd this type of magazine. *Fantastic Planet* and *The Lotus Eaters* were both extremely good. Let's have some more stories about Ham and Pat.

In closing, let me say that Astounding Stories is by far the best of all its three rivals. In fact I have stopped buying the other two.—George Griffin, 1 Westmere Street, Portland, Maine.

Making Rockets Practical!

Dear Editor:

Well, your April issue has sure come out with a bang! I mean it, for the stories sure were are high and top all other publications. Each story was extraordinary good, and we only regret to that you only publish Astounding Stories every month, for I have to wait a whole month to read the conclusion to *The Fourteen Engines*. The story is very good and fully justifies the title "Thought-variant."

It may be of interest to your numerous readers to hear that the New York branch of the International Cosmos Science Club is working on powder rockets. At the present time we have proved and disproved—to ourselves, at least—some of the innumerable theories regarding the flight of rockets. We have a program whereby we fire several rockets once a month, but as time goes on we intend to fire rockets more frequently, when time and money are more available.

We would welcome inquiries and are more than willing to exchange information with any other parties that may be experimenting with rockets. Our immediate aim is to prove the value of rockets in relation to carrying mail.—Herbert F. Gaedtke, Chairman Publicity Committee, 701 Jackson Avenue, New York, N. Y.

Exit With Finesse!

Dear Editor:

Exhortation is not argument, and I was amused to read Mr. van Kampen's May assertions—that I had not solved the problem, and that it was not a two-minute task to expose his fallacy. It will of course be clear to any mathematically minded reader that those assertions were entirely unsupported save by a few scientific sounding words which actually were as irrelevant as the story was supposed to be. In fact, upon mathematical analysis, this mass of

words reduces to the proposition that zero equals zero—which is scarcely a contribution to either science or literature.

However, one phase of this letter explains quite vividly why he is sufficiently unable to perceive the difference between work and energy. He argues that because a given amount of fuel is capable of doing different amounts of work, the law of conservation of energy does not hold. "——or by the $W=FxS$ formula, where S is calculated, actually or as a velocity." Lines 16 and 17, page 156, May issue.

Further argument on my part at least, is neither desirable nor possible; for any man who could make such an utterly indefensible distinction statement as that, is either entirely ignorant of the fundamental laws of physics or is simply thumbing his nose at us, his readers.—Ima Kenlet, Ill.

Tucker, America, and SPWSSTFM!

Dear Editor:

For some time I have been following the tussle between Mr. Tucker and Mr. Wollheim over who shapes is our mag. I have studied both their plans and have drawn my conclusions as to which is the best. Mr. Tucker's, of course.

If Mr. Wollheim's plan went into effect here's what would happen: Wire staples made of platinum, appearing in great quantities every month, would soon be worth nothing. And as platinum all over the world would correspondingly lose value. Then we would be up to our necks in another depression much worse than the last one. So, away with Mr. Wollheim's plan!

Now Mr. Tucker promises no entertainment while reading. According to his letters one can lay down, quit the Record chewing gum out and throw upon it while reading. I would much rather have gum to chew on forever, than riches for a few months, possibly depression and possibly revolution. So hooray for Mr. Tucker's plan!

There is but one logical thing to do. If there are any red-blooded Americans left among the fans, and that is to unite behind the man and plan which will mean security for America. Wollheim's plan would be the downfall of America. Tucker's plan would be the uplifting of it. For European fans would buy mags in great quantities for the novelty and fun, so let's stand behind Tucker, America and SPWSSTFM.—Sammy Darkess.

Today and Yesterday!

Dear Editor:

This is a peculiar letter—both a compliment and a slam combined. I, as many others, have witnessed the rapid climb of Astounding Stories and its final overshadowing of its two competitors. In my opinion it is absolutely supreme in its field. No other magazine has in proportion, secured such a well-known array of authors.

In the beginning—that is, when the magazine was known by others—much simpler themes were used. I don't mean that the definite part of plot were used. There were thought variants, although not embracing such a wide field as they do to-day. The stories were scientific, but they were not dominated by this element as most of your stories are. The elements of drama, adventure, and even humor were played upon much more than they are to-day. I can only have this to a parent—human, and warm of affection—becoming engrossed in something and though not intentionally neglecting his child, still creating a boundary between them. The child being neglected, gets over his liking and merely tolerates.

I can compare an old Hawk Carse story to *The Skylark of Valeron*. Although filled with enough technicalities to gladden the hearts of the most particular students of science, there was more emphasis on the human side. To me this story was a psychoanalysis of a man's character. I feel that in the course of its progress to have more Carse stories published, this same view has played an important part.

I am not an interested observer of scientific phenomena, but merely one of the many average laymen who read your magazine, not on the up-to-date scientific theories embodied in it but merely for the dramatic interest I can find. The Skylark was too comprehensive for the average person to grasp. Without much explanation, it went into such deep themes as only a physicist and astronomer could realize and appreciate. I know that it received a luke-warm reception by the readers, and its length proved nonsensical.

Can't some of this old idea be brought back? I am sure that the increased number of readers would justify it. In closing let me say that I possess a complete file of the magazine from its first issue and would like to dispose of all or parts of it.—Milton Weiner, 2420 Baker Street, Baltimore, Maryland.

Cerebral Gymnastics!

Dear Editor:

The Van Kampen-Kalstaky controversy is still bobbing merrily along. But the whole matter has a certain humorous aspect which seems to escape the two contestants. Our dear Kalstaky seems to miss the point that Astounding Stories is nothing but cerebral gymnastics and not to be taken too seriously on any account. Van Kampen has so far the better of the argument but fails in supposing that anything definite about energy is known to our humanity.

Let's look at the whole matter from the point of view of a member of humanity so much older than ours that our best minds appear as prattling three-year-olds to an octogenarian. Let me say that such humanity does not exist. It does, even in our own solar system on a planet which is supposed to be in its infancy and wait for human habitation. Their mastery over nature and its laws has been complete for hundreds of years. And some of their knowledge has been available to a few on Earth.

Van Kampen is right in thinking that there is something wrong with the laws of energy as now accepted. According to them, even a "perpetuum mobile" is an utter impossibility. But the writer remembers to have seen one for years in the show window of a watchmaker's shop in this city of New York.

What we know about energy is based on our very limited knowledge of matter and its properties. We don't even know what matter really is! Electrons, protons, neutrons quanta—all are beautiful words depicting some aspect of matter. But of its reality they give no picture. Since matter is nothing but condensed energy—by the way, what is back to energy?—the two are one and indivisible. And what we don't know about either would make a nice library.

Among the accepted tenets of to-day too many are based on apparent facts. Some of them are: The Fitzgerald contraction, the velocity of light as ultimate velocity, the removing from absolute bases which are non-existent, the concept which places physical matter as the fundamental of creation, that the physical universe is the only one of the most important, and last but not least, the idea that our scientists actually know something of reality.

Smith in the Skylark stories is about the only author who has a slight, however distorted, view of reality and the capabilities of homo sapiens, the son of the Master. This universe is Mind and therefore Law, but the physical part of it is its least crude and most indifferentiated extravagance. Understanding of the whole and its laws is impossible from a purely physical platform. So long as scientists limit themselves to purely physical phenomena neatly separated into 'watertight' compartments, surprising facts will come along to upset the apple carts of their theories.—Frederick G. Hehr, Sayville, New York.

"Old Faithful" *Equaled?*

Dear Editor:

So Jack's coming back at last. I thought Williamson had given up writing entirely and was almost resigned to that sad, sad plight when I saw by Fantasy Magazine that he had just recovered from a long illness, and was coming to Astounding again. Then you confirm it. Swell! He is the best scientific fantasy-adventure writer who ever put pen on paper.

I got out my back copies—in a sad condition from much use—and read the *Legion of Space* over again. That was the best serial you ever printed. The parts where Star makes his uncertain way up to the *Purple Dream*, using the insect wings as a glider, and later where his uncle takes off with the greatness, are splendid and show a perfect sense of timing—just as important in writing as in acting or composing.

The only rival he has is John W. Campbell, who writes an entirely different type of story, and stresses science founded directly on present-day science—doing things with it no one else ever could—to develop the plot. Both are perfect in their field, but I like Williamson a little better.

John Taine is more than welcome. That story of his, *Twelve Eighty-Seven*, got away to a four-star start. It, too, is quite different in nature from either Campbell's or Williamson's work. The hero seems like a darned nice chap; intelligent, but no demigod. The kind I'd rather like to meet, if you get me. Let Jack Darrow shoot, but I hope you have enough of it for seven installments, if all of it is as good as the first one. Taine has built up a splendid background for his action.

Now if you will get S. P. Meek and the elusive Merritt, you will have a list of names to dazzle the most blase. Anyway, paying your authors twice what the others do has certainly produced results.

John Fearn did his best work for you in *Earth's Womb-Prison*. As usual, his science is not so hot, but that doesn't detract much from this story. I rate him a whole point higher after reading it.

But one thing in your last issue has me worried—the announcement that the *Son of Old Faithful* will appear in the July issue. The original needed a sequel, but it was so nearly perfect that I'm afraid the sequel cannot quite live up to it, and may detract from, rather than add to, the first. Gallun is a master, but whether he can write a sequel to fit that masterpiece is a question. *Old Faithful* had that touch of genius which is found in a story about once a year—never more often. I rank it among the eleven greatest science-fiction tales ever written. Well, time will tell. If this should happen to reach Brass Tacks, every one will have read the story before any one sees this.—Ramon F. Alvarez-del Rey, 1916 Massachusetts Avenue, Washington, D. C.

A Return To The Fray!

Dear Editor:

I return to the fray, somewhat exhausted for having endlessly cut my way through underbrush in hopes of sooner or later reaching the real fray. Somewhere, somehow, I know there must be an actual fray going on, with real warriors to chop into. So far I have met only men of straw who distract me.

I am going to reframe my challenge; I'm going to frame it in such a way there will be no more fighting underbrush. I will answer points that have been raised recently, then hereafter I remain quiet on any objections raised unless they attack my original basic contention. I concede: The power-plant idea is not sound economically; the idea of the injunction at the beginning is not sound legal practice. Both are irrelevant. They are story. Color. They are not of the slightest importance!

I hereby challenge any and all to disprove this statement, quoted verbatim from the story, December, 1934, page 49, first paragraph of right-hand column: "If the ship is traveling ten feet a second, relative to Earth, and the push is one thousand pounds, then those ten pounds of fuel did ten thousand foot-pounds of work. But if the ship just happened to be traveling at the rate of ten miles a second, then those same gases, burning at the same rate, in the same way, did five million, two hundred and eighty thousand foot-pounds of work." I will allow you to challenge any other part of the story. But until you disprove that above statement, the basic principle of the story remains undisturbed. The challenge concerns—please note carefully—that, and that alone! That statement alone violates the law of conservation of energy. The whole problem is wrapped up in it.

Now for other odds and ends brought up this time. This is the last statement regarding odds and ends.

Having loaned the April issue, I don't know who it was said something about ergs not being the same on Antares as on Earth. This month Mr. Kenneth Harrison makes a similar statement, that foot-pounds aren't the same everywhere. Wrong. Both of them, utterly, totally wrong. An erg is defined as the work done by a force of one dyne acting through a distance of one centimeter. The centimeter is defined in a way that leaves it affected only by the Einsteinian relativity—otherwise, anywhere at all, under any and all conditions, it is the same. A centimeter on Earth is the same distance as the centimeter on Antares, or van Maanen's star.

A centimeter is defined in terms of the wave-length of a certain spectrum line of cadmium light. It is, then, as unchanging as light. All other units are defined from it. A gram is the mass, and not the weight of one cubic centimeter of water at its maximum density. Will we agree that that is fixed—on Earth or Antares? The mass, that is—to all intents and purposes. There is no such thing as a weight of one gram. A mass of one gram weighs about 980 dynes on Earth. Then a weight must be expressed in dynes, not grams, to be absolutely accurate.

A dyne is defined as that force which, acting on a mass of one gram will produce an acceleration of one centimeter per second.

And I have already given the definition of the erg. Now it can be seen that an erg is absolutely invariable, Earth ergs and Antares ergs are the same thing.

Now for foot-pounds. A foot is a measure of distance, defined in terms of centimeters, so from the above discussion, a foot is a fixed length, invariable. A pound mass is defined in terms of grams, so that is, likewise, invariable. The mass does not vary, no matter how the weight varies, with position. Now a foot-pound is a force of one pound acting through one foot. A pound force is not the same as a pound mass. It is defined as the force which will produce an acceleration of 32.2 feet per second in a one-pound mass.

I assure you it is invariable, and not in the least dependent on gravity of the locality. The whole trouble arises from the utter slithering insanity of the English system of weights and measures that somebody long since forced on us. They tried to get around it by inventing a unit called a poundal and another called a slug. That simply meant some more complexity, so science got disgusted and quit. They figure it out in intelligible metric units, and when they get the answer, convert it for the benefit of those who want it. Try sometime to find a table of the foolish points of the elements in Fahrenheit system.

To Mr. Eschetorp: Your argument is fishy because the only law of perpetual motion is the law of conservation of energy.

Mr. Tarr: The gases from a rocket on which it pushes are the gases which are being discharged at any given instant. The relative velocity of these then is zero until after the push. Herein is the difference between the automobile and the rocket. Get it?

Mr. Edward Hart: A reasonable objection, but not applicable. As I said, the power-plant

idea wasn't suggested for a money-maker really. Actually, though, the Lenz law objection is simply the objection that it takes energy to produce energy—the law of conservation of energy. The rocket ship carrying the generating equipment is to be propelled against the Lenz law resistance by the rockets. The Lenz law resistance is the generation of electric power.

Finally—again to Mr. Rocketeer: Synthetic plastics have an amazing strength. Quite sufficient to withstand air pressure in building a rocket ship, since all the strain would be a tensile stress, and not too great a stress at that.

For those who produce two-minute solutions: It is a complex problem. I recently received privately twelve rather closely written pages of calculus disproving it. It was followed shortly by three more from the same source. The latter showed the error in the first twelve.

By the way—in my letter in the May issue, the printer set up a formula rather illegibly. For V=Km/r read V equals the square root of km over r.—Karl van Kampen, 881 Massachusetts Avenue, Cambridge, Massachusetts.

More Science!

Dear Editor:

Please permit me to have my say about the *Irreverent* controversy. Mr. van Kampen's real argument seems to be this: If the velocity of the ship with respect to the Earth is A, and with respect to the nebula is B, the difference of the velocities is, of course, B-A, while the difference of the energies is $K(B^2-A^2)$, where K is a constant depending upon the mass of the ship and the units used. This last difference is equal to $K(B+A)(B-A)$. Since there is no restriction as to choice of units, they may be chosen so that $K(B+A)$ equals 1. In that case, the difference of the energies would be equal to the difference of the velocities, which overcomes the objection raised by the author in, I think, the March Astounding, and illustrated by a table of values.

Out here we want all the science in the stories that we can get, no matter what kind it is. That's why we liked *The Mightiest Machine*, and we clamour for more like it. Also, unconventional stories like *Set Your Course by the Stars*. As to Tucker and Wollheim—we're getting a new stadium at Coney Island which will be just the thing for them.—A. L. Solkowitz, 2314 81st Street, Brooklyn, New York.

The Greatest Achievement!

Dear Editor:

Congratulations on returning John Talze of book and quarterly fame to science-fiction.

But every month, on swiftly searching through the new issue, I must—whether I write or not—inwardly acclaim you for your greatest enduring achievement since the Street & Smith rebirth of Astounding: and that is Dold, superartist Elliott Dold, Jr., illustrator unimpeachable, post-master par-master! His disappearance after the feid of Miracle, Science and Fantasy Stories, in which his brilliant work began can never be forgiven; for every illustration he does not make is so much the greater loss to science-art enthusiasts. Eleven elevations of extreme delight are his illustrations in the May number; most particularly, the inspired *Electric Express* picturization of the feeling of an infinite intelligence.

I see, by the way, that I seem to have been the villain of J. George Frederick's space-and-time tale. Or, at least, one of the Achermans. I'm sure it's a pleasure to be even the villain in a story of such magnitude, however.

You will find ratings of the issue's stories in Fantasy.

Do I understand correctly? That, according to Dictator Tucker, the spwuuttm—the title of the antagonist is never to be spelled in capitals—Article 28, Section 7, the IAOPUMUMPSTFPUSA Constitution, the un-staple society proposes binding magazines with chewing gum? Unthinkable! Monstrous! Tucker, why'n't chew gum up sumethme? And don't write—wire!—Forrest J. Ackerman, 530 Staples Avenue, San Francisco, California.

Beauty is Truth!

Dear Editor:

Although I read, on the average, not more than half the contents of Astounding Stories, I purchase it because what fantasy you do print is indeed good. As I've just purchased the latest issue, June, I have not had time to read it. However, three yarns look as if they had a touch of fantasy. They are: *Alas, All Thinking*, *The Invaders*, and *Blue Hase On Pluto*. What has happened to C. L. Moore? And I beg of you get Charles Willard Diffin, L. A. Eshbach, Clifford D. Simak, Anthony Gilmore and S. P. Wright.

Gosh! I could go on for hours, but there is one author I would like to see again. He wrote only one story that I can remember in the old Astounding. It was called *Out Around Regal* and the author was Robert Wilson. I would like to see another of his stories. Why not give him one chance at least? I think that he might surprise you with a humdinger.

Enough of authors and stories. Let's get down to business, or should I say Brass Tacks?

Why do you have your authors stick into an otherwise good yarn obliterating mathematics to prove a certain theory or to explain the actions of a half-baked scientist. Any one knows that the stories that appear between the pages of Astounding are merely there to entertain the reader, and to bring to that personage a few hours of imaginary flight into a land where his worries do not exist. You continue to needlessly hamper the yarns with mathematical language that doesn't mean anything to those who read for enjoyment alone.

Why, look at the recent *Skylark* story—400 pages of mathematics! Needless to say, I did not read it.

If those fellows by the monikers, Smith, Ph. D. and Campbell, and those who are advocates of the same, want to read nice juicy numbers, and screwls of mathematics, which to them is the same as literature, let them go to the nearest library and take home several copies of "Superscientific Counsel's Annual Report." I want fantasy, unadulterated, and plenty of it! I am sure there are countless others who want the same and at this point I'd like to thank Jack Wilson, Harold F. Keating, and Mr. Harradon for agreeing with my last letter. They are undoubtedly all lovers of fantasy and I consider them as friends.

Wouldn't you readers like to see the magazine chock-full of colorful stories—stories in which one's imagination is carried far off into fantastically weird atmospheres where all is beautiful and color runs riot? Adventure among the distant stars! A story where space and its glories are described in words of color and action—not as in the *Skylark*, where beautiful locales are described in words of science. A lane of scintillating stars described in light years where it should be worded as a plane of bizarre settings. In these science stories a glare of beauty is always spoiled by a burst of mathematics.

I suggest that you all write to the editor and try to make him see that it would be best to look to the issuance of such a magazine, instead of dealing us out scientific bunk. I am screaming, crying, yelling, and begging for it!—L. J. Camille, 1727 Sassafras Street, Erie, Pennsylvania.

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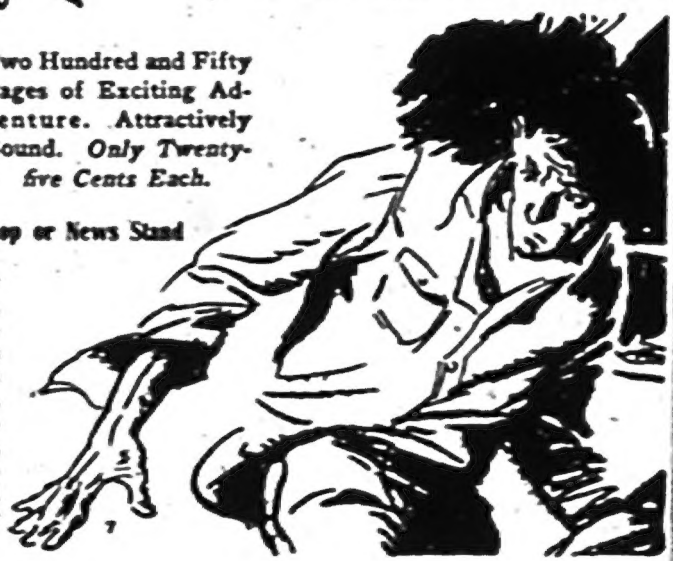
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